

If You Build It, The Patients Will Come:

Outcomes of a Primary Care Model Redesign



University of
Colorado Hospital

UNIVERSITY OF COLORADO HEALTH

Corey Lyon DO

Aimee English MD

Peter C. Smith MD

University of Colorado Family Medicine Residency

Disclosures

- None.

Objectives

- Upon completion of this session, participants should be able to:
 - Describe the key components of the APEX care model.
 - Apply components of APEX to their clinical setting after discussion of the implementation steps.
 - Evaluate similar large-scale clinical transformation projects by applying quality improvement methodology using common clinical and process measures.

Background – Changes That Work

- **The Triple Aim**—enhancing patient experience, improving population health, and reducing cost—is accepted as a **guiding principle** for health care system improvement.¹
- Growing recognition of the impact of healthcare workforce **burnout** on health and patient satisfaction has led to expanding to the **Quadruple Aim**.²
- **Team-based care** has been shown to improve health care quality and health outcomes and reduce cost.^{3,4}
- Built upon **University of Utah’s Care by Design**, the University of Colorado’s APEX model is based on expanded medical assistant roles and MA-to-provider ratios.

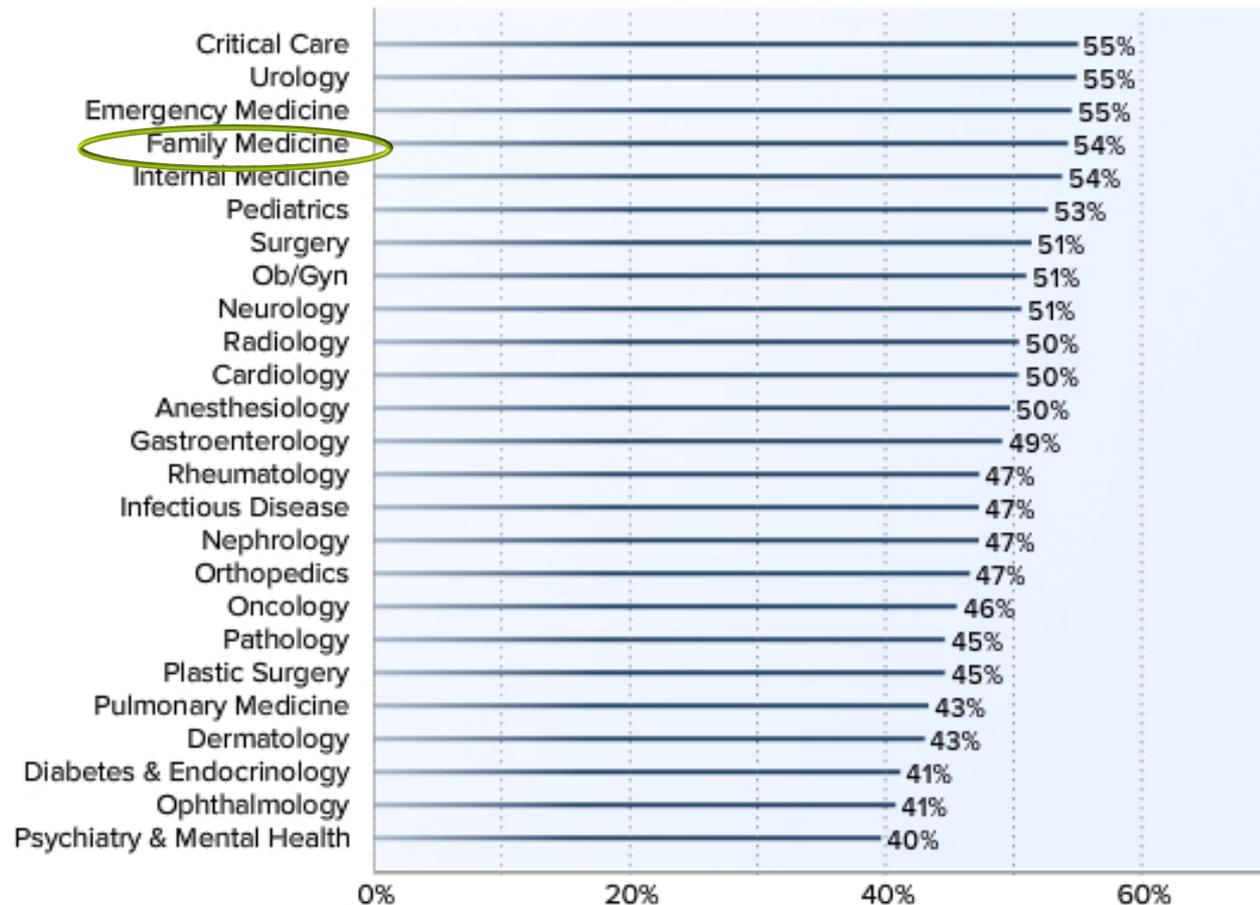
1. Berwick, DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. *Health Aff (Millwood)*. 2008;27(3):759-769.
2. Bodenheimer T, Cinsky Christine. From Triple Aim to Quadruple Aim: Care of the Patient Requires Care of the Provider. *Ann Fam Med* 2014; 12:573-576.
3. Boulton C, Green AF, Boulton LB, Pacala JT, Snyder C, Leff B. Successful models of comprehensive care for older adults with chronic conditions: Evidence for the Institute of Medicine’s *Retooling for an Aging America* report. *Journal of the American Geriatrics Society*. Dec 2009;57(12):2328-2337.
4. Naylor MD, Coburn KD, Kurtzman ET, et al. Inter-professional team-based primary care for chronically ill adults: State of the science. Unpublished white paper presented at the ABIM Foundation meeting to Advance Team-Based Care for the Chronically Ill in Ambulatory Settings. Philadelphia, PA; March 24-25, 2010.

Background – Changes That Work

- University of Utah's model showed financial sustainability:
 - Shifted the bottom line of its community clinics from **(\$21 million)** to \$244,000 over a 5 year time period
 - Generated > \$5million/month of downstream gross revenue per month from in network referrals

Background— Issues with the Current State

Which Physicians Are Most Burned Out?



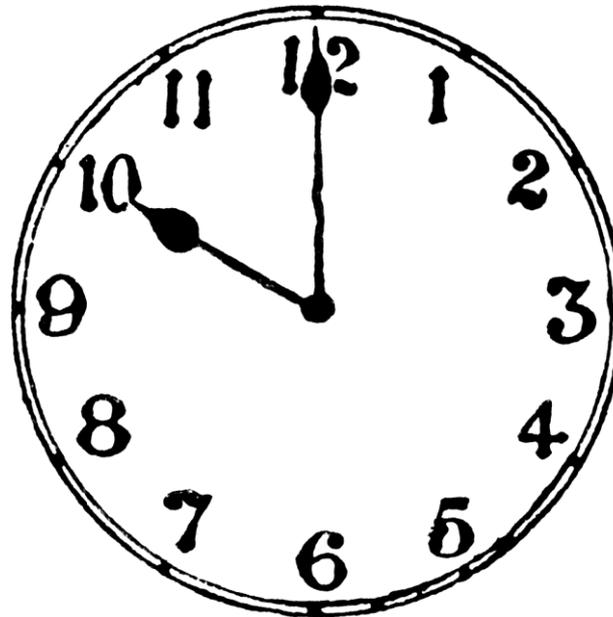
Background— Issues with the Current State

“To fully satisfy the USPSTF recommendations, 1773 hours of a physician’s annual time, or 7.4 hours per day is needed for the provision of preventive services.”

Background— Issues with the Current State

(Acute + Chronic + Prevention Care) x Panel =

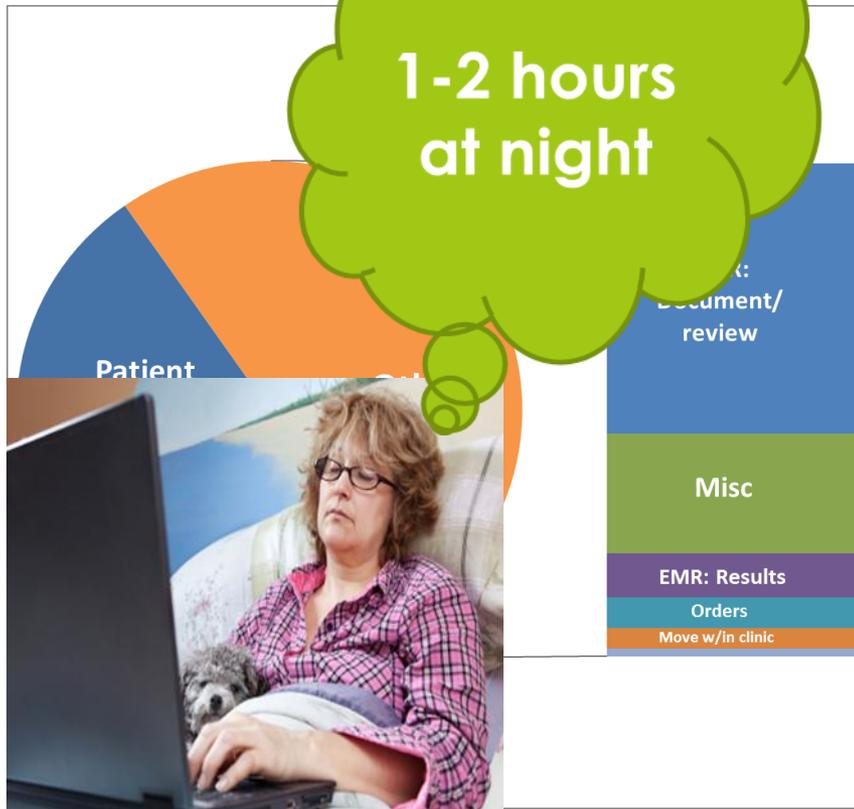
21.7 hours per day



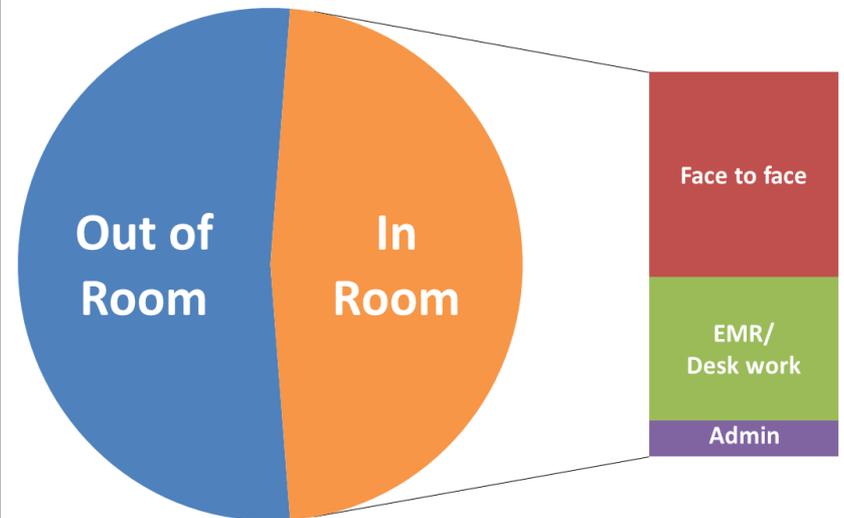
Background— Issues with the Current State

How do providers spend
the

1-2 hours
at night



What do providers do in
the room?

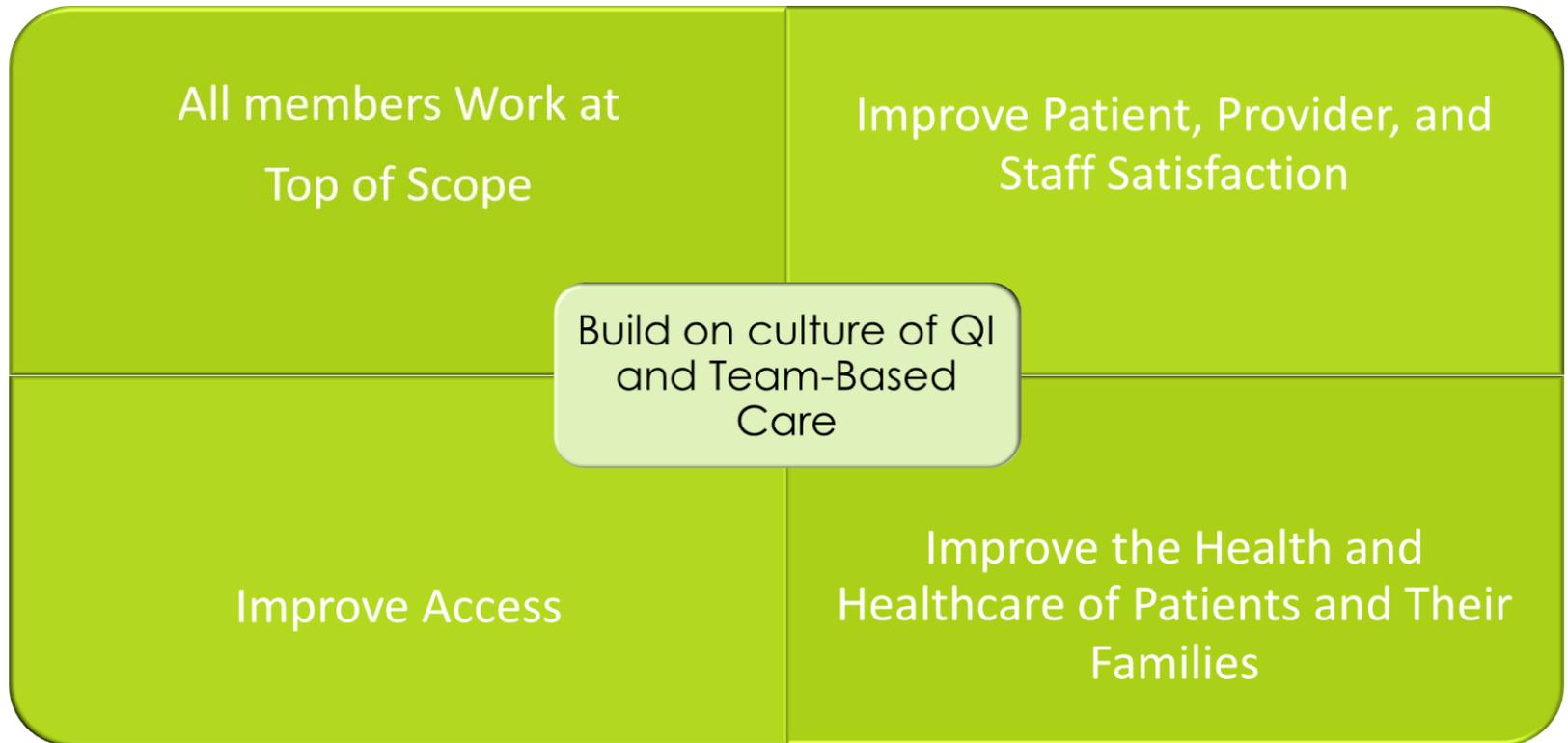


Background— Issues with the Current State

- Baseline Clinic Quality Data had room for improvement:

Quality Measure	Pre-Go Live Mean
% of pts with colorectal cancer screening up to date	50.3%
% with blood pressure at goal (<140/90 under 60, <150/90 over 60)	69.9%
% with mammograms up to date	46%
% of diabetic pts with A1c >9	18.1%
Average hours per week providers spend documenting between 7pm and 7am (adjusted by cFTE)	7.5

The APEX Model

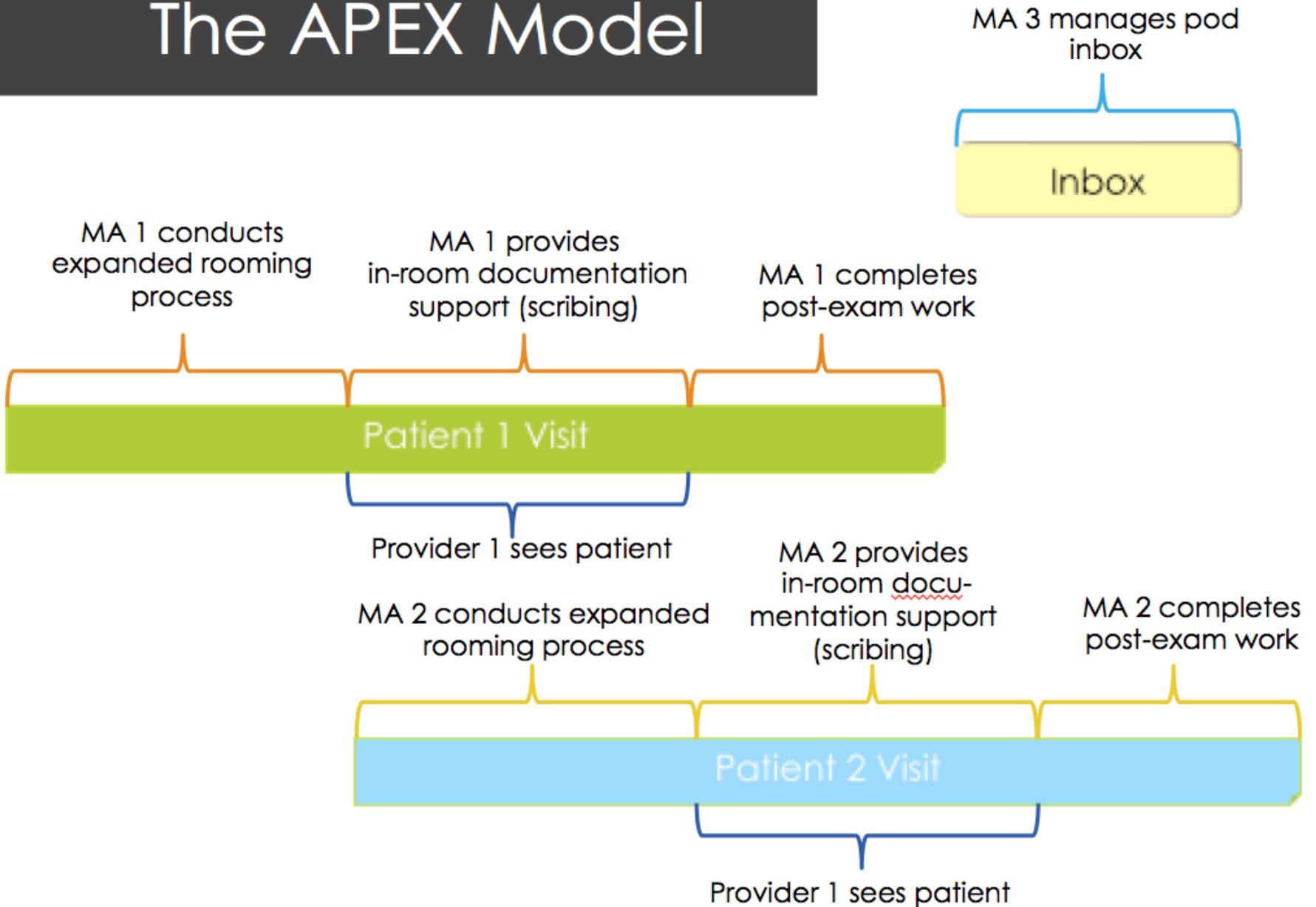


Pre-Visit	
New Patient:	<ul style="list-style-type: none"> • Conduct New Pt Questionnaire in EPIC • Obtain old records
Established Patient:	<ul style="list-style-type: none"> • Pre-visit labs, Outside records • Pre-visit assessments (PHQ-9, Medicare Wellness questions, etc.) • In-Box management (Refills/PARS, MHC, lab call-backs, etc.) • Care management outreach
Advanced Rooming	<ul style="list-style-type: none"> • Height and weight • Chief complaint, complete agenda, top 2 concerns • Allergies/med rec/pharmacy/Pend refills • Update Medical/Surgical/Family history, advanced directive • Screenings: Fall, suicide, Learning barriers, PHQ2/9, GAD, etc. • Identify and act on Care Gaps • Take BP & enter vital signs • Get necessary equipment (biopsy materials, pap, etc.) • Sets agenda with patient • Obtain brief templated HPI/ROS ("X-Files")
In-Room Support	<ul style="list-style-type: none"> • Documentation support • Other "on the fly" support as directed (get team members, complete labs, prepare vaccines, room next patient, etc.)
Post-Provider/ Check out	<ul style="list-style-type: none"> • Review plan and instructions • Schedule follow up visits • Gives vaccines, performs blood work as needed • Escort patient from practice

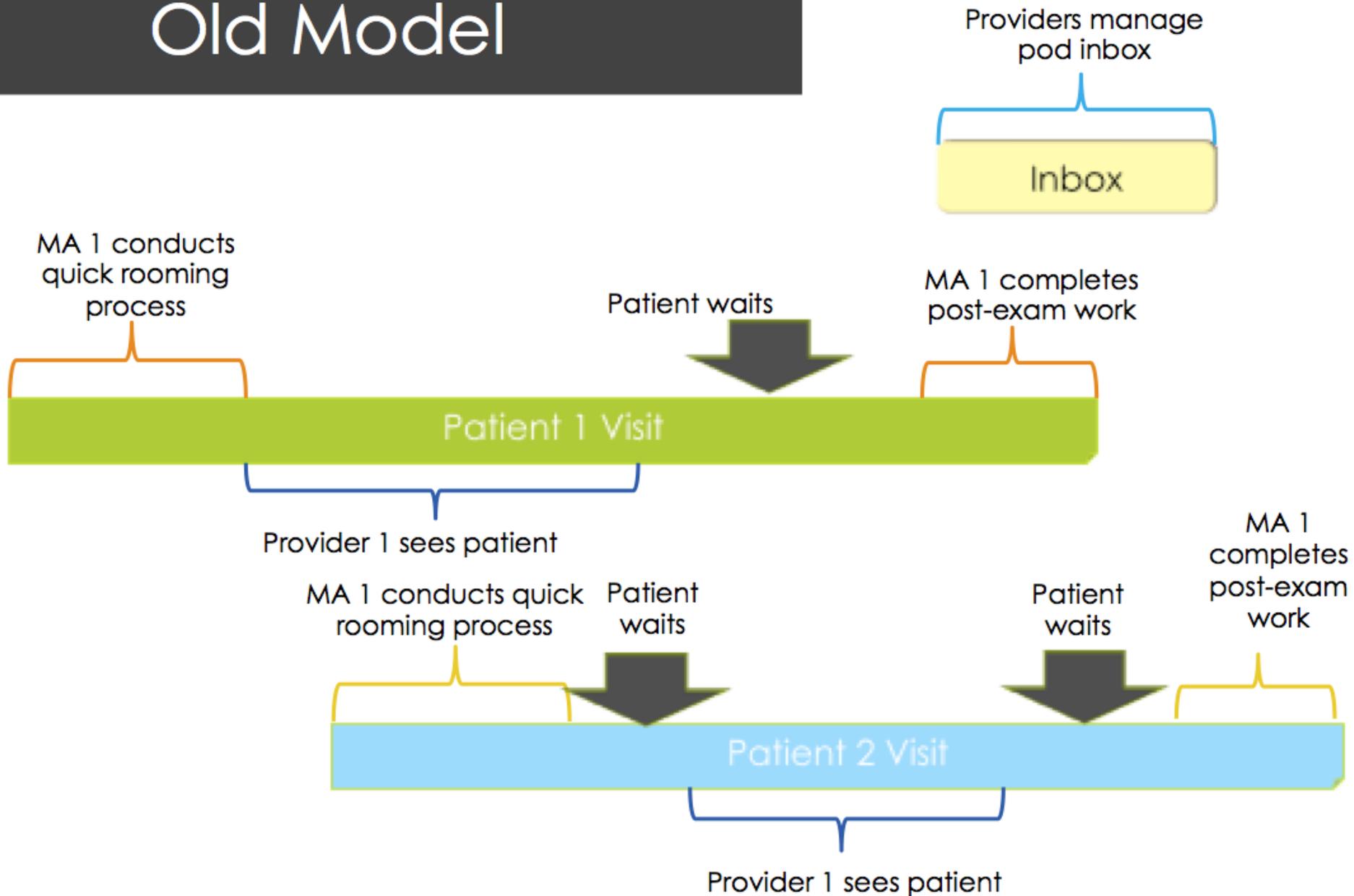
The APEX Model

- 5 MAs: 2 provider
- MA stays with patient during entire clinic visit
- MA stays in room to assist with documentation and implementing plan
- MA completes post-exam tasks, provides after visit summary

The APEX Model



Old Model



The APEX Model

- Instituted PARTy (Patient Arrival Time – yay)
 - 20 minutes scheduled with MA before provider scheduled time
- Leveled provider schedules
- Decreased visit types that qualified for 40 minute visits
- Changed MA schedules to either 8, 10, or 12 hour shifts
- Staggered lunch schedule for MAs

5/5/2015 visit with Mullen, Rebecca, MD for NEW PATIENT VISIT - EST CARE

Actions

Images References SmartSets Media Manager Print AVS Preview AVS Request Outside Records

Visit Event Vitals/Pain HTWT Medications Meds & Orders Visit Info History Immunizations Health Maintenance Allergies Verify Rx Benefits Reconcile Disposes Disclaimer Healthcare Directive Previous Screenings Screenings Hearing/Vision Patient Education Time Out Travel Screening

History [click to open](#)

Medical History

Diagnosis
Musculoskeletal disorder
 Back and neck
Depression
Migraines
 with aura
Thyroid disease
 Had portion of thyroid removed 2/2 mass effect
Anxiety
Arthritis
Unspecified asthma(493.90)
Neuromuscular disorder

Surgical History

Procedure
THYROID SURGERY
 Portion of thyroid removed 2/2 mass effect
APPENDECTOMY

Gender Identity and Sexual Orientation

Questions
 What is your current gender?
 What gender was assigned to you at birth?
 What is your current sexual orientation?

Healthcare Directive

Questions
 Healthcare Directive
 Responses: No
 Healthcare Directive Info Offered/Provided
 Responses: Yes
 Healthcare Directive Info Declined?
 Type of Healthcare Directive
 Additional Healthcare Directives
 Healthcare Directive Contents/Comments
 Healthcare Decision Maker
 Healthcare Decision Maker Name/Phone
 Healthcare Decision Maker #2 Name/Phone
 If none, then General Contact Name/Phone

Family History

Problem	Relation	Age of Onset	Comments
Cancer	Mother		
Heart disease	Mother		
Negative History	Brother		
Negative History	Sister		
Negative History	Sister		
Negative History	Son		
Negative History	Son		
Negative History	Son		
Other	Father		Blood clot heart/leg Blood Clots
Other	Mother		

Substances and Sexuality

Smoking Status	Amount	
Never Smoker	N/A	
Smokeless Tobacco Status		
Never Used		
Alcohol Use	Amount	
No	N/A	
Drug Use	Frequency	
No	N/A	
Sexually Active	Partners	Birth Control/Protection
Yes	Male	IUD

- SnapShot
- Review
- Health Maintena...
- Immunizations
- Medications
- Review Flowshe...
- Results Review
- Growth Chart
- Rooming
- Plan
- Wrap-Up
- Communications
- Letters
- Order Entry
- Sign Visit
- Flowsheets

Notes (4)

Balderrama, Ga
[Edit](#)
 Lab draw comp location right; 1
 Urine sample w

Stanberry, Han
[Edit](#)
 3 way abdomer

Spittler, John P
[Edit](#)
 I reviewed the c
 housestaff's des
 plan. Briefly, th
 exam of LLQ to
 of some pain. 1

Jack Spittler, M
 Senior Instruct
 Family Medicin

Mullen, Rebecc
[Edit](#)
Assessment at
 (UPI ASSESSM
 Left belly pain-
 process due to
 Miralax
 Increase fiber in
 Bentlyl
 F/uo in 2-4 wee

Visit Event Tracking

Rooming Ready for Provider Provider in Room **Visit Complete**

Visit Information

Chief Complaint

Follow-up DM
Leg Pain side pain that shoots down to leg

Recent Visits with Shmerling, Alison, MD

Primary Dx
 11/19/2014 Urinary incontinence
 11/11/2014 Diabetes mellitus
 10/20/2014 Hypertension

Other Visits in Family Medicine

Provider Primary Dx
 12/02/2014 Gaspar, David L, MD HTN, goal below 130/80

Vitals/Pain

New Reading

05/05/15
 1343

VITALS

Temp 35.9 (96.6)
 Temp Source Temporal Artery
 BP 130/90
 BP Location Left arm
 BP Method Manual
 Patient Position Sitting
 Heart Rate 64
 Heart Rate Source Radial
 Resp 20
 SpO2
 O2 Status
 SpO2- Pt at Rest or with Activity
 Is Patient Menstruating ?

Breastfeeding Status

Pain Assessment

Patient Currently in Pain No

HTWT

New Reading

05/05/15
 1343

Height and Weight

Height 167.6 cm (5' 5.98")
 Weight 101.152 kg (223 lb)

Create Note

Ginther, Patri

Edit

Lab draw com
 hand; 2nd atte

Steigerwalt, T

Edit

Blood draw
 Attempt(s): 1,
 Site: Left ac 8
 Pt Tolerated v

Spittler, John

Edit

I reviewed the
 housestaff's d
 plan. Briefly,
 glyburide. Re

 Jack Spittler,
 Senior Instruc
 Family Medici

Shmerling, Al

Edit

Assessment :
 1. HTN, goal
 Today BP with

 2. Elevated li
 Elevated 10/20
 why I recomm
 - simvastatin (
 - Lipid panel; I

 3. Urge incor
 Stable, follow
 covered soon

The APEX Model

- ▣ Detailed medication reconciliation:
 - ▣ Removes:
 - ▣ Patient Reported Meds no longer taking
 - ▣ Meds placed in error
 - ▣ Duplicate (ie same med, but 2 doses)
 - ▣ Therapy completed
 - ▣ Old prescriptions (original Rx >12 months)
 - ▣ Pends medications needed refilled

Medications

Please verify the patient's list of medications and add new medications as reported.

Add Medication

Sort by: Show Details

Pharmacy WAL-MART PHARMACY 2752, COMMERCE CITY, 5990 DAHLIA, CO

FLAGGED FOR PROVIDER REVIEW WITH PATIENT: Provider needs to decide if appropriate to remove medication from list. If not appropriate to remove, instruct patient to follow up with his or her prescriber.

Not Taking (FLAGGED FOR PROVIDER REVIEW WITH PATIENT: Provider needs to decide if appropriate to remove medication from list. If not appropriate to remove, instruct patient to follow up with his or her prescriber.)

Alcohol Swabs swab

Apply 1 each topically once as needed.
Disp-100 each, R-0, No Print, Last Dose: Not Taking

Refills: 0 ordered Pharmacy: WALGREENS DRUG STORE 07581, DENVER, 7311 E 29TH DR, AT NEC OF QUEBEC & 30TH AVE/MARTIN LUT, CO
Note written 5/5/2015 1334: **Never had** (Edit Note)

Alphabetical

albuterol HFA 90 mcg/actuation inhaler

Inhale 1-2 puffs into the lungs every 4 hours.
Disp-6.7 g, R-1, Normal, Last Dose: Taking

Refills: 1 ordered Pharmacy: WALGREENS DRUG STORE 15434, DENVER, 3555 COLORADO BLVD, AT NWC OF COLORADO & 35TH AVE, CO
Note written 5/5/2015 1334: **PRN** (Edit Note)

Taking Not Taking Unknown Taking

BLOOD SUGAR DIAGNOSTIC (ONE TOUCH ULTRA TEST) strip

1 strip by In Vitro route daily.
Disp-300 each, R-3, Normal, Last Dose: Taking

Refills: 3 ordered Pharmacy: WALGREENS DRUG STORE 07581, DENVER, 7311 E 29TH DR, AT NEC OF QUEBEC & 30TH AVE/MARTIN LUT, CO

Taking Not Taking Unknown Taking

BLOOD-GLUCOSE METER (ONE TOUCH ULTRA 2) kit

1 kit by In Vitro route once as needed.
Disp-1 each, R-0, Normal, Last Dose: Taking

Refills: 0 ordered Pharmacy: WALGREENS DRUG STORE 07581, DENVER, 7311 E 29TH DR, AT NEC OF QUEBEC & 30TH AVE/MARTIN LUT, CO

Taking Not Taking Unknown Taking

clobetasol (TEMOVATE) 0.05 % ointment

Apply topically 2 times daily. Apply 2 times a day for 3 weeks then use daily.
Disp-30 g, R-2, Normal, Last Dose: Not Taking

Refills: 2 ordered Pharmacy: WAL-MART PHARMACY 2752, COMMERCE CITY, 5990 DAHLIA, CO
Note written 5/5/2015 1335: **Now able to get med due to insurance issue** (Edit Note)

Taking Not Taking Unknown Not Taking

conjugated estrogens (PREMARIN) 0.625 mg/gram vaginal cream

Take 0.25 Applicatorfuls as instructed nightly at bedtime. Use 1/4 applicator nightly for 2 weeks than 2-3 nights per week
Disp-30 g, R-4, Normal, Last Dose: Not Taking

Refills: 4 ordered Pharmacy: WAL-MART PHARMACY 2752, COMMERCE CITY, 5990 DAHLIA, CO
Note written 5/5/2015 1336: **Not able to get due to insurance problem** (Edit Note)

Taking Not Taking Unknown Not Taking

glyBURIDE (DIABETA) 1.25 mg tablet

Take 1 tablet by mouth daily (with breakfast).
Disp-90 tablet, R-3, Normal, Last Dose: **Not Recorded**

Refills: 3 ordered Pharmacy: WAL-MART PHARMACY 2752, COMMERCE CITY, 5990 DAHLIA, CO

Taking Not Taking Unknown

ibuprofen (ADVIL, MOTRIN) 600 mg tablet

Take 1 tablet by mouth every 6 hours as needed for Pain. Take with food.
Disp-20 tablet, R-0, Normal, Last Dose: Taking

Refills: 0 of 0 remaining Last Dispense: 10/15/2014 at UCH ED PHARMACY

Taking Not Taking Unknown Taking

lancets

Taking Not Taking Unknown Taking

Ginther, Patricia I

Lab draw complet hand; 2nd attempt

Steigerwalt, Dev

Blood draw

Attempt(s): 1, Rik

Site: Left ac & Le

Pt Tolerated well

Spittler, John Pat

I reviewed the car housestaff's desc plan. Briefly, the glyburide. Refiller

Jack Spittler, MD Senior Instructor Family Medicine

Shmerling, Alison

Assessment and 1. HTN, goal bel Today BP within r

2. Elevated lipid Elevated 10/2014, why I recommend - simvastatin (ZOC - Lipid panel; Futu

3. Urge incont in Stable, followed b covered sooner, b

The APEX Model

- ▣ Expanded Rooming:
 - ▣ Completes orders based on protocol
 - ▣ UA
 - ▣ HCG
 - ▣ Strep
 - ▣ A1c
 - ▣ Pulse Oximetry
 - ▣ Flu vaccine
 - ▣ Peak Flows
 - ▣ Monofilament exams
 - ▣ Adult immunizations

The APEX Model

- Expanded rooming:
 - Gaps in care
 - Orders and pends any test/services overdue based on the Health Maintenance Module in EPIC
 - Lipids
 - DM2 screening
 - Colonoscopy
 - TSH
 - DM tests – A1c, monofilament, microalbumin
 - Immunizations

The APEX Model

- HPI and ROS documentation support
 - Use “xfiles”
 - Preloaded questions and ROS for symptoms or diseases or preventive exams
 - ~250
 - Many adapted from University of Utah

Test, Angela Pref Name: None MRN: 2302185 Allergies: No... Code: Not on file PCP: None Special Needs: None Prim Ins: None My...
01/01/1982, Female,... CSN: 15884 SSN: 000-00-0000 FYIs: None Infection: None Home: 000-000-0000 Need Interp: None MHC: Inactive

Notes

Snapshot

Review

Review Flowshe...

Synopsis

Immunizations

Flowsheets

Rooming

OB Charting

Plan

Notes

NoteWriter

More Activities

Notes

+ Create Note

New Note

HPI ROS Physical Exam

Bookmark

Assessment and Plan:
 [UPI ASSESSMENT/PLAN:2103000045]

Subjective:

Patient ID: Angela Test is a 33 y.o. female who presents to University Family Medicine-A.F. Williams for ***

HPI
 Headaches:

History of Present Illness:
 -Description of the headache (dull, throbbing, band-like)? ***
 -History of injury to the head or neck?: ***
 -Cerebral imaging in the past (CT scan or MRI)? ***
 -Headache medications tried in the past: ***
 -Photophobia (light hurts eyes)? ***
 -Visual aura (spots or flashes of light with headaches)? ***
 -Quantity of caffeine use: ***
 -Date of last eye exam? ***
 -Does the headache wake you up from sleep? ***
 -Missing school or work due to headache? ***

Targeted Review of Systems:
 -Focal neurologic defects (weakness or numbness)? ***
 -Cluster symptoms (nasal congestion or tearing)? ***

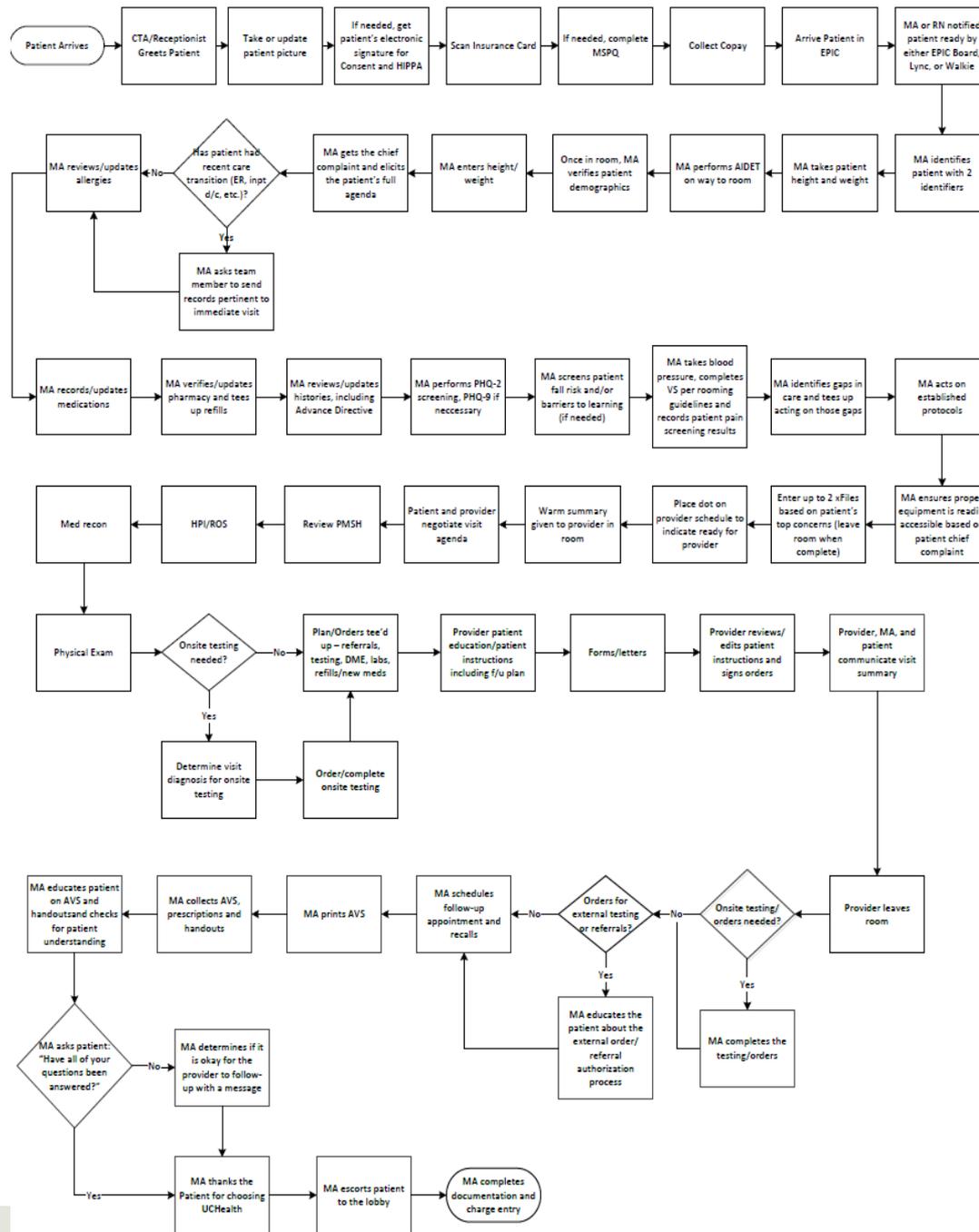
Sign at close encounter

Accept Cancel

The APEX Model

- In-Basket Management
 - All messages (except symptomatic triage calls) go to MAs
 - MA address as much as possible
 - Call pt for more information
 - Pend any orders
 - Draft pt requested letters
 - Then forward to provider as needed for sign offs, additional information, etc.

APEX/Primary Care Workflow – Check in to Check out



Trainees– Residents

- 1st years – MA updates PMSFH
- 2nd year – MA updates PMSFH and does x-file with ROS
- 3rd year – Full model – all of the above + in room documentation support (scribing)

Trainees— Med Students

Meet with Student
Discuss Patients and
Goals

Provider sees 1st
patient, student enters
room with MA during
rooming of 2nd patient

MA completes
rooming and leaves,
med student
completes H&P
(Please allow MA to finish
their rooming before asking
additional questions)

Provider ends 1st
visit, meets with
student and
answers any
questions about
patient 2

MA, Provider, Student
see patient 2

Student presents
patient in room,
while provider
types

MA takes over
computer, provider
does exam, plan
discussed- student
first, then provider

MA completes visit,
Student and Provider
leave and Debrief –
focus on 1 teaching
pearl

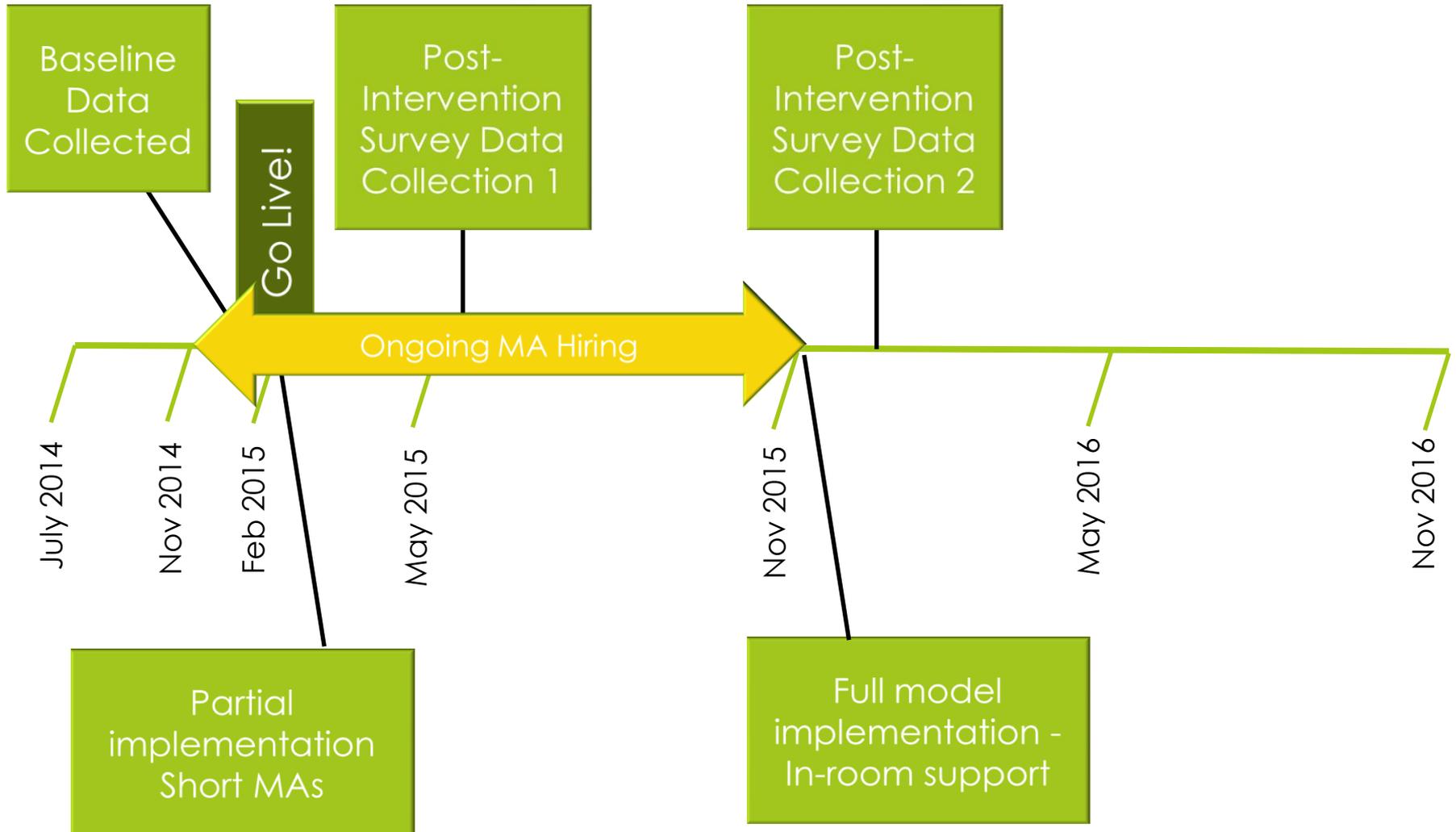
Provider moves on to
patient 3. Student starts
process over with
patient 4 (Repeat)

If behind have student wait out an additional encounter and read on previous or future patient visit

Implementation

- 2 Pilot Sites:
 - Large Residency site
 - Small Private Practice
- 9 Rapid Improvement Events
- 6 Months of Planning Prior to Go-Live

Implementation



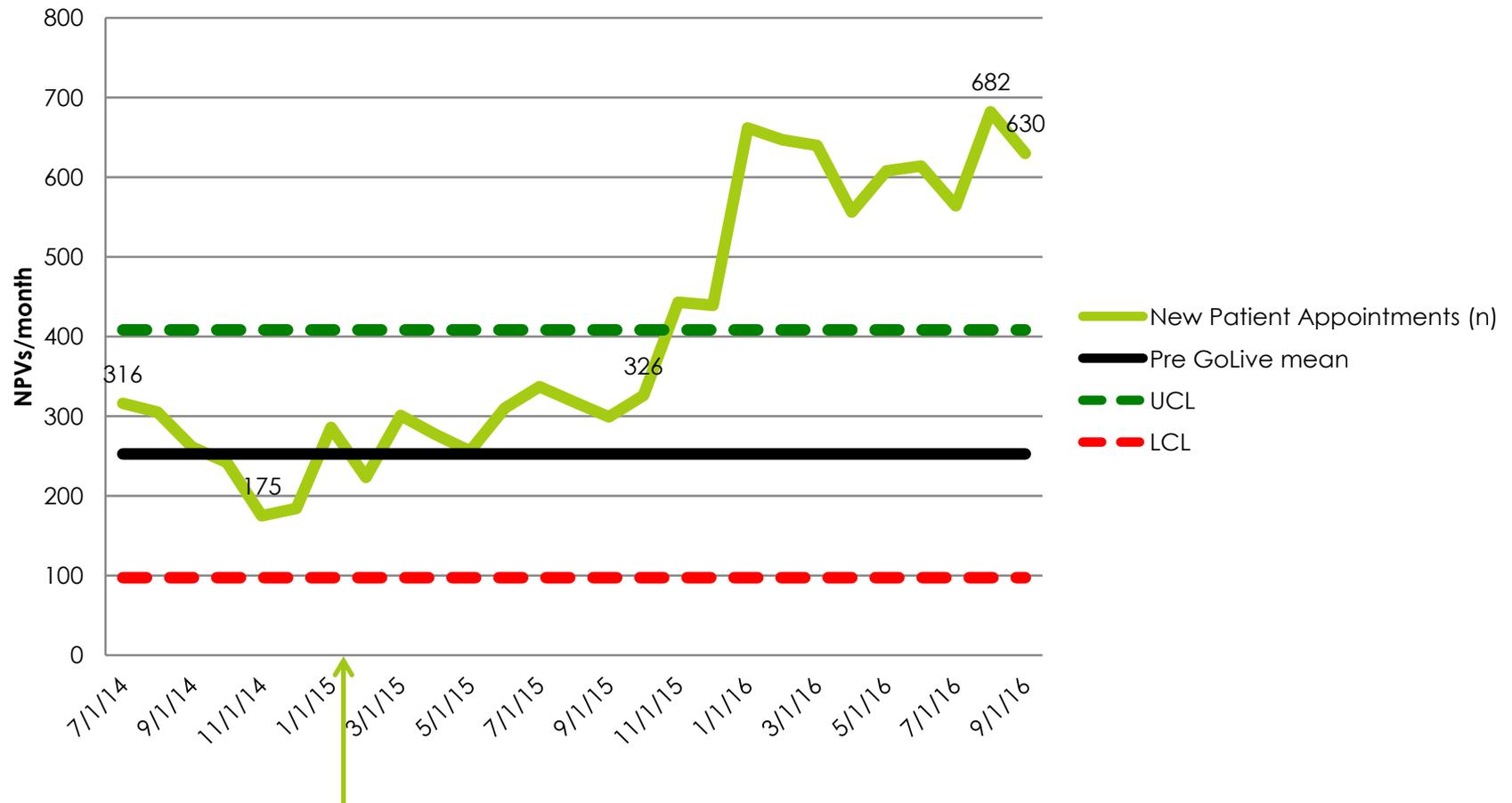
Outcomes--

Statistical Process Control Charts

- AKA “Shewhart Charts” or “Statistical Process Control Charts”
- Invented by Walter Shewhart (1891-1967)
 - “Grandfather of Quality Improvement Science”
 - Inventor of “PDSA” method of quality improvement (aka Shewhart Cycle)
- Originally devised for manufacturing in 1920s
- Commonly used in Health Care QI activity
- Components:
 - Historical population Mean
 - Sigma, or Standard deviation of that mean (σ)
 - Control Limits (Mean +/- 3 times the standard deviation)
 - Upper Control Limit (“UCL”) = $+ 3\sigma$
 - Lower Control Limit (“LCL”) = $- 3\sigma$

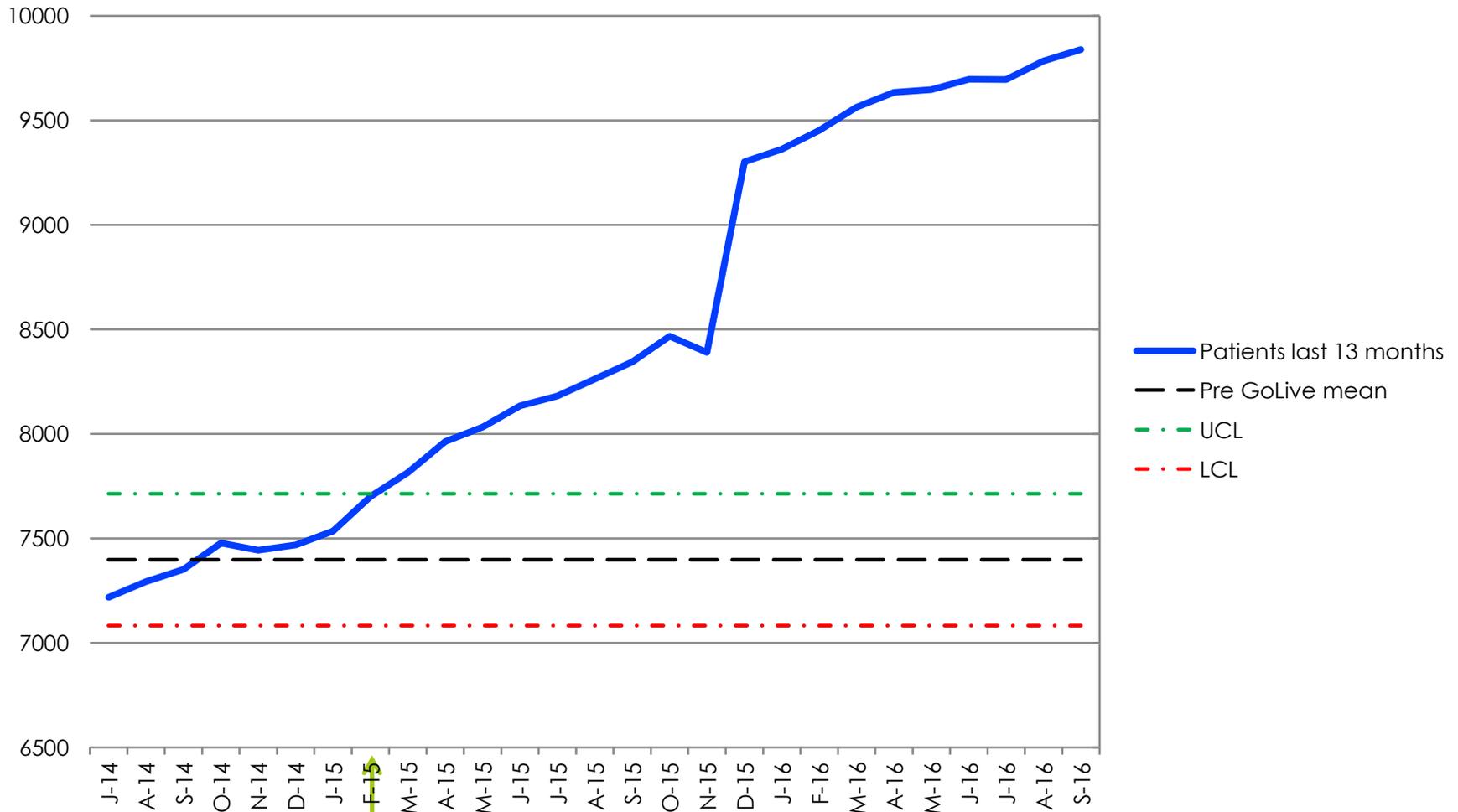
Outcomes— Productivity

of New Patient Appointments per Month

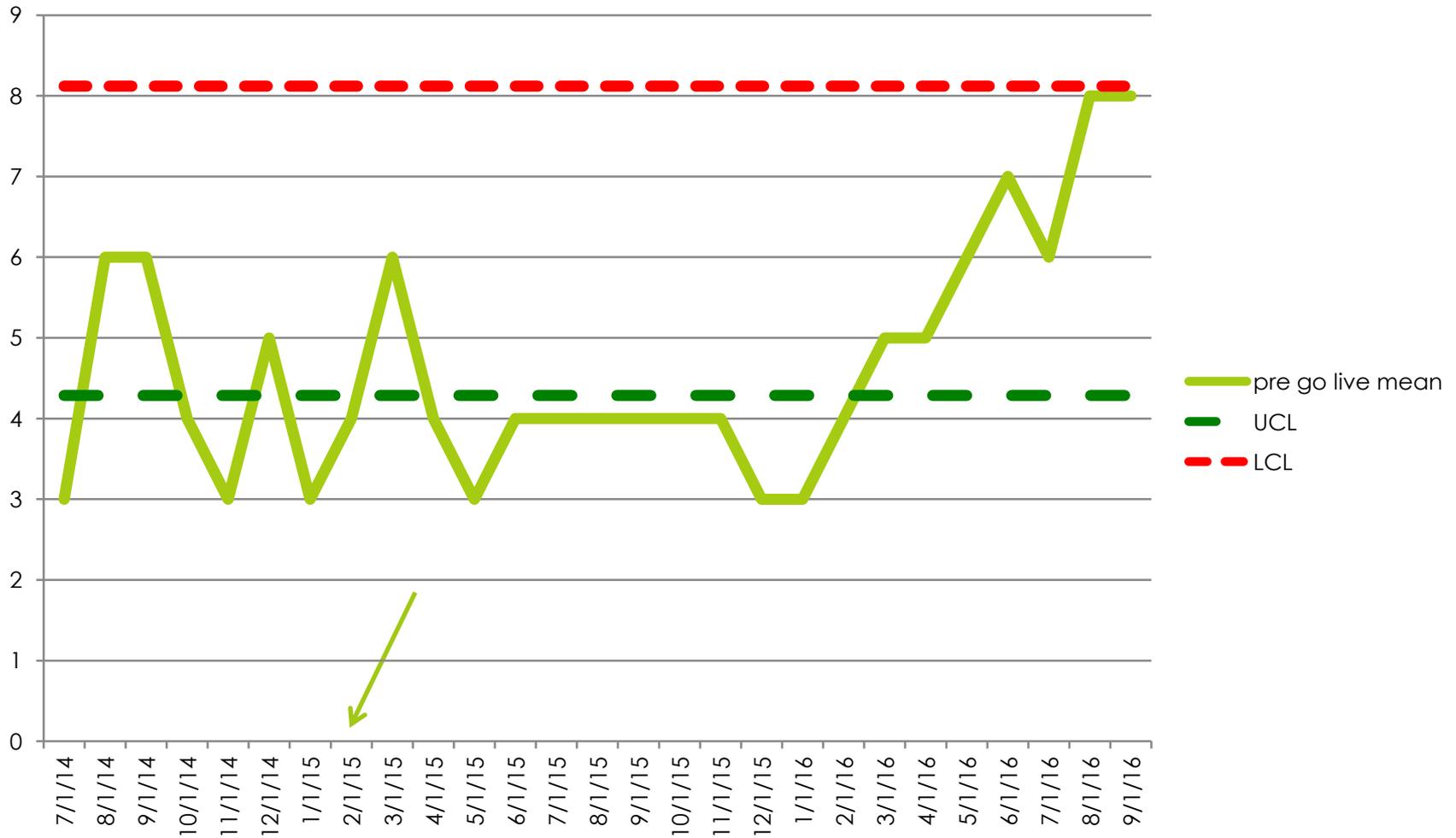


Outcomes— Productivity

Total N of Patients Seen in the Last 13 months

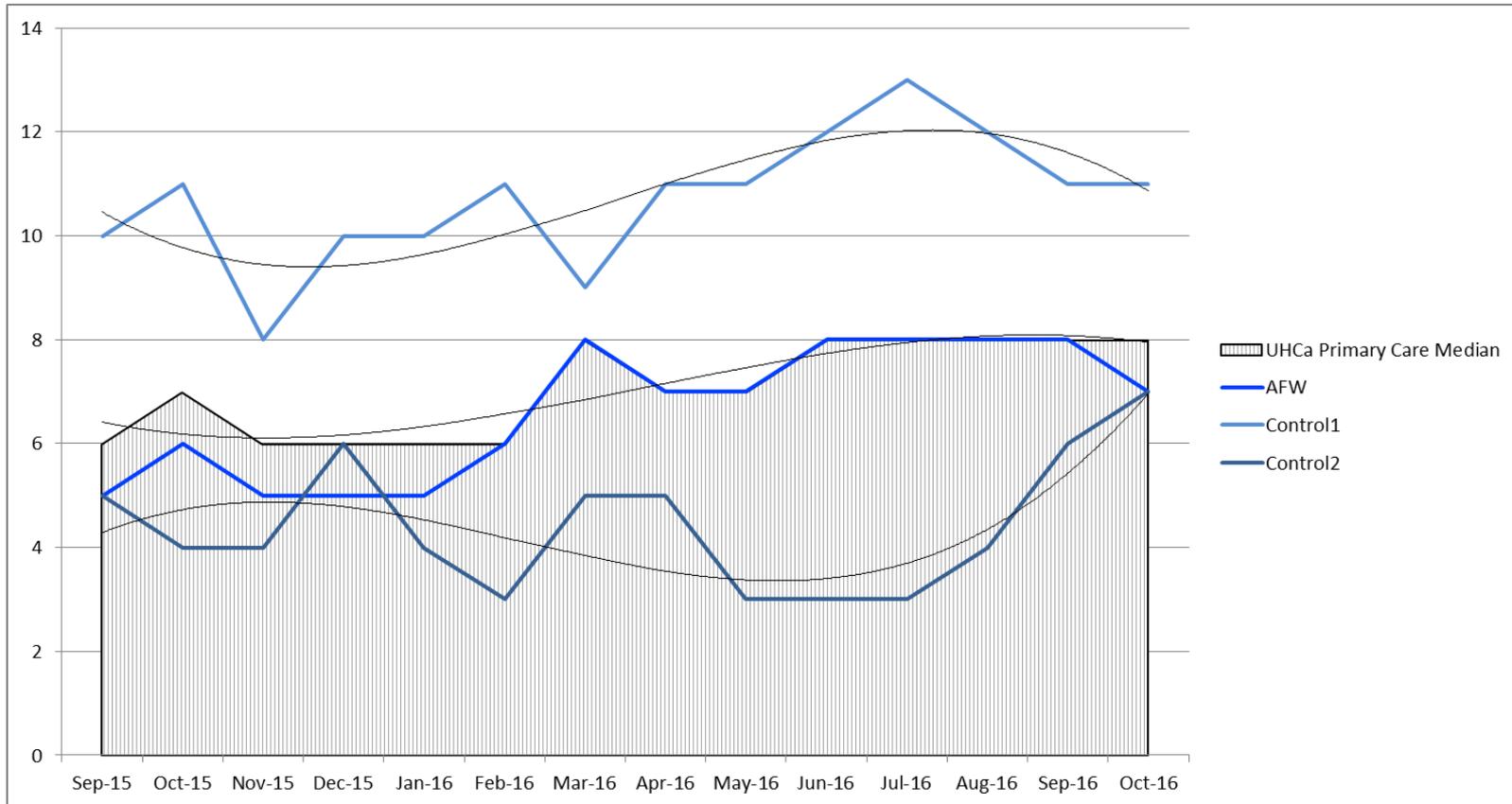


Outcomes— Access



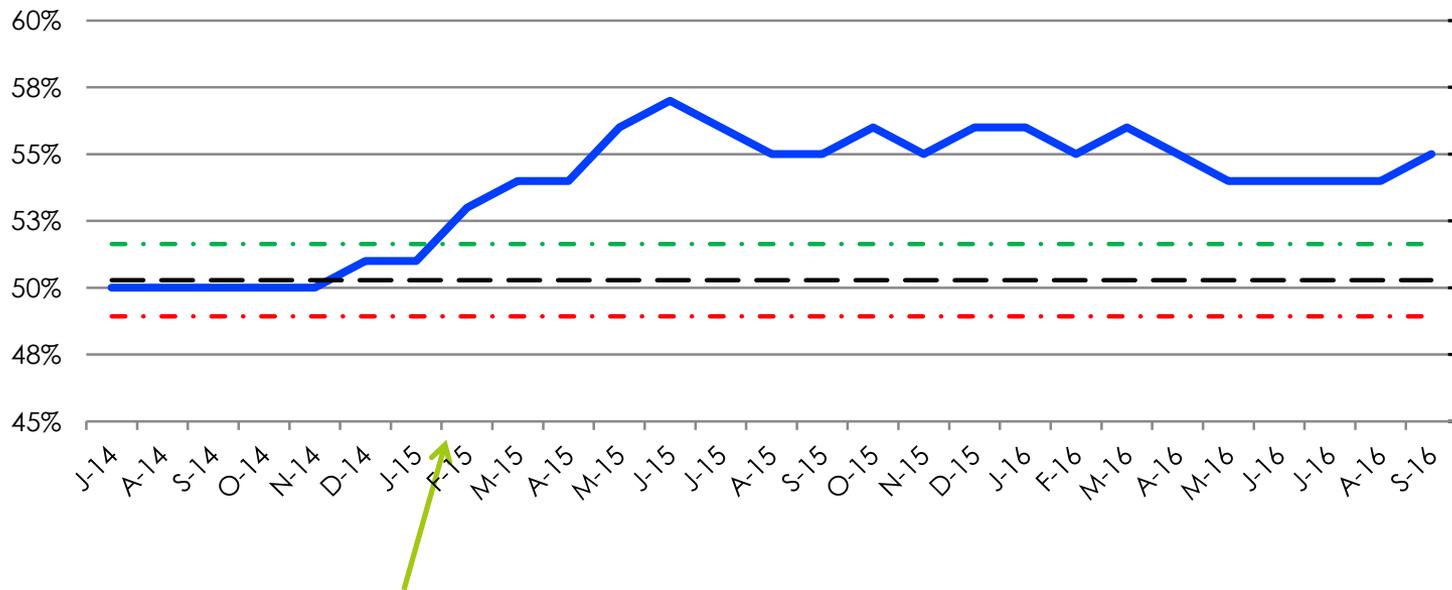
Outcomes— Access

Median Time to Third Next Available Appointment



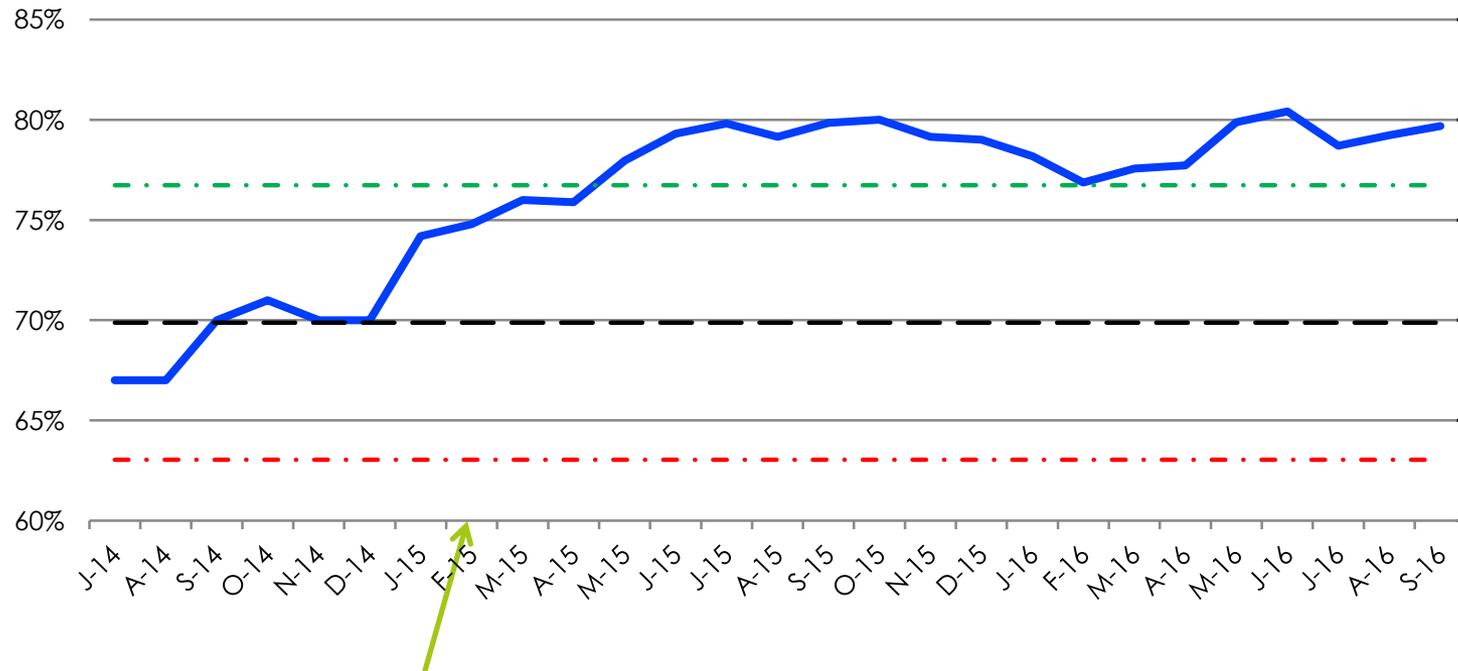
Outcomes— Quality

% of Clinic Population with Colorectal Cancer Screening Up to Date



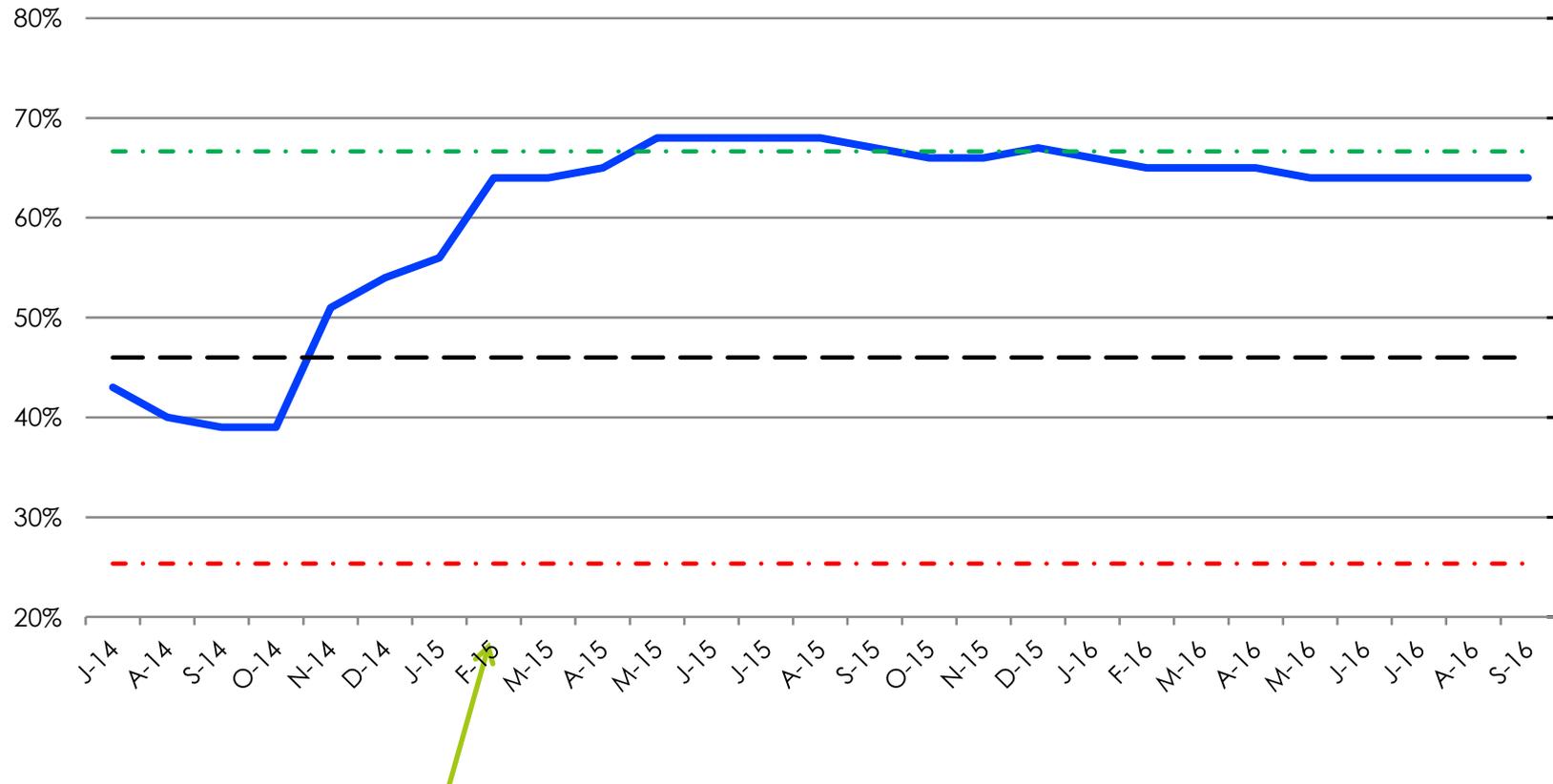
Outcomes— Quality

% of Clinic Population with Blood Pressure at Goal
($<140/90$ for <60 , $<150/90$ for >60)



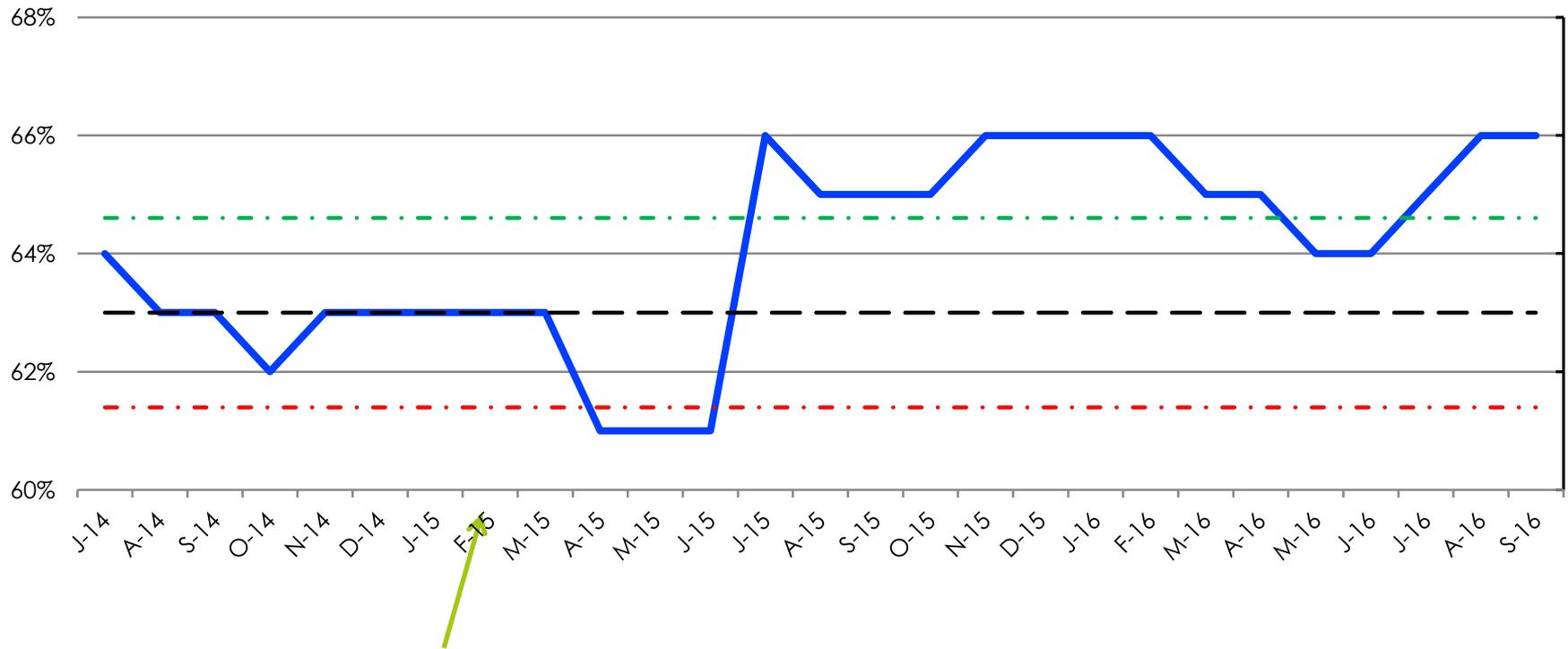
Outcomes— Quality

% of Clinic Population with Mammography Up to Date



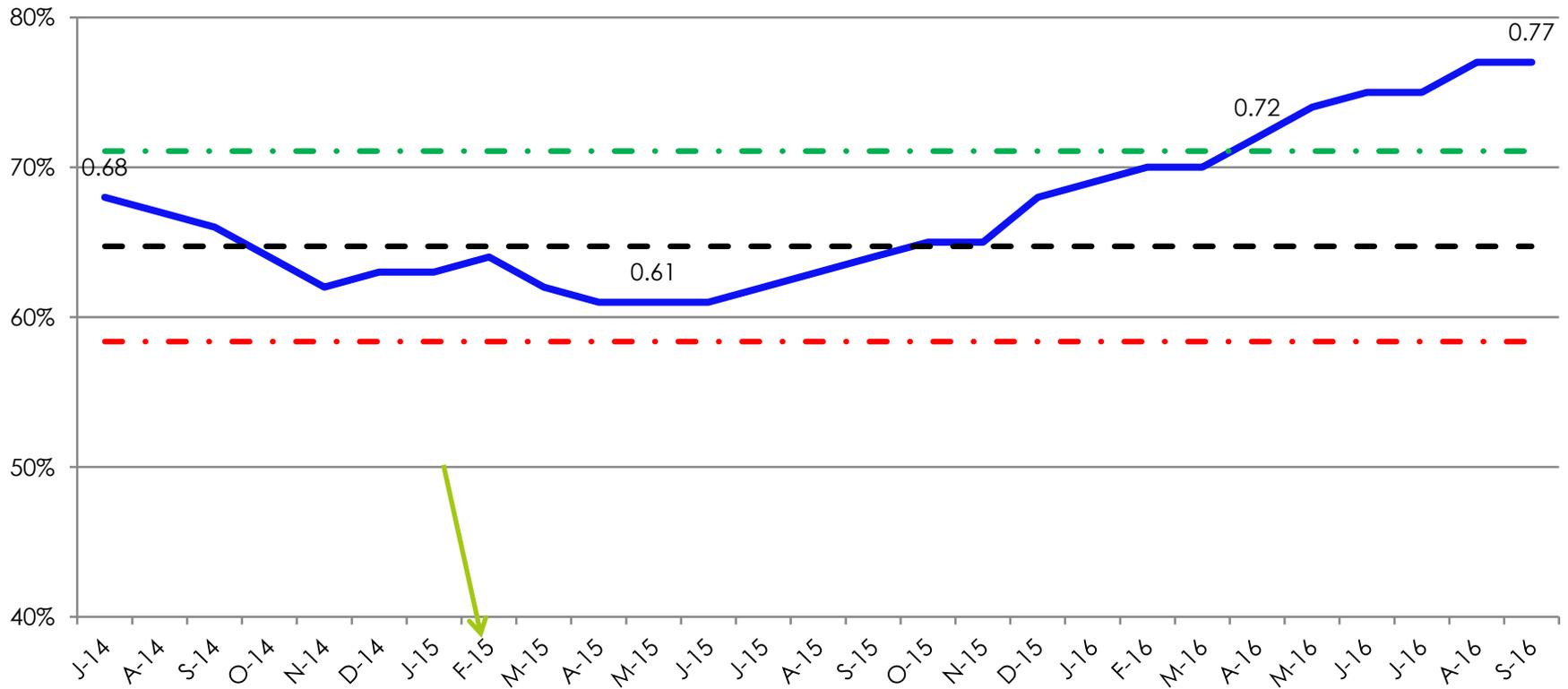
Outcomes— Quality

% of Clinic Population with PCV Vaccination Up to Date



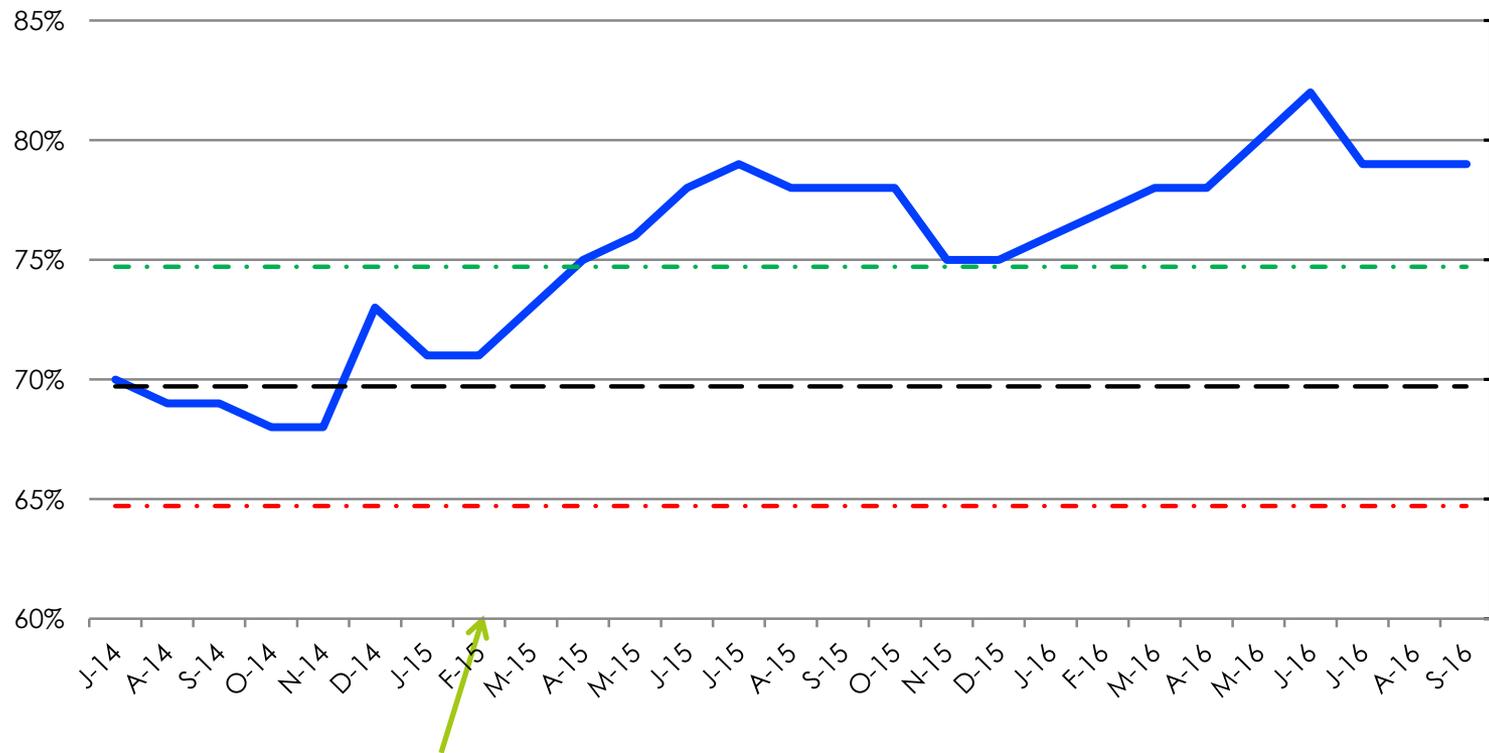
Outcomes— Quality

% with Positive PHQ2→9



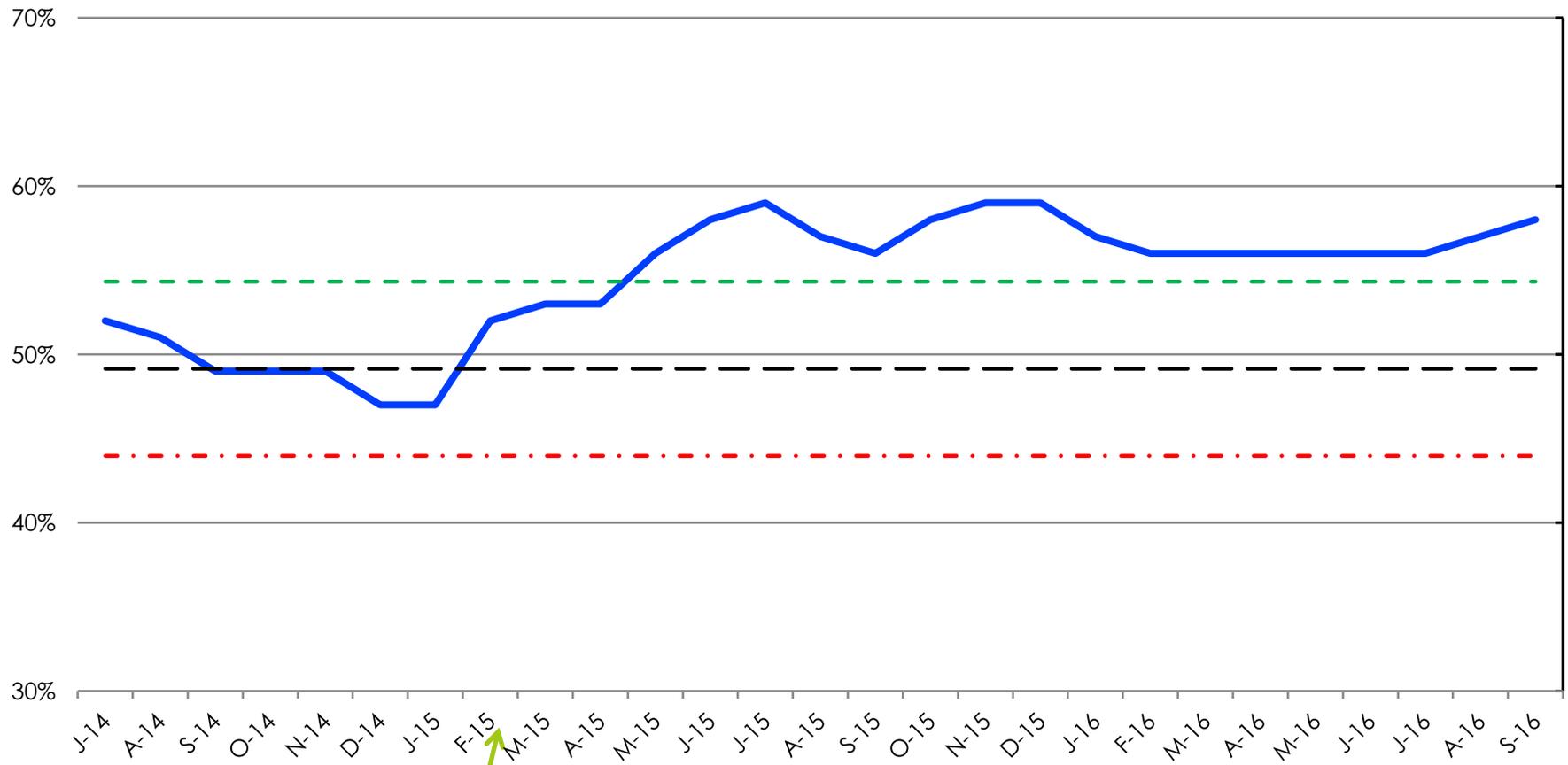
Outcomes— Quality

% with Diabetes with BP < 140/90



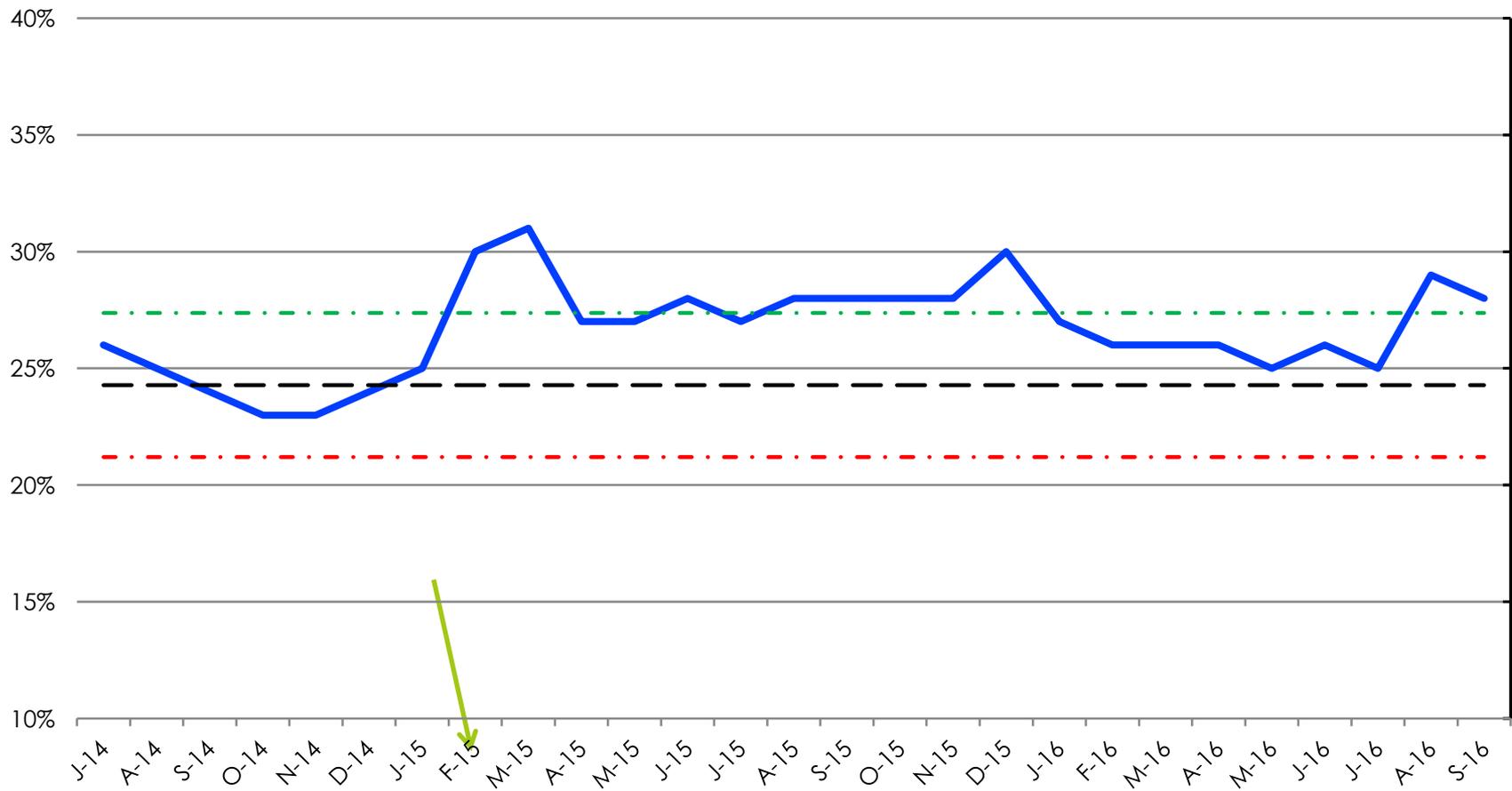
Outcomes— Quality

% with Diabetes with Foot Exam in the Last 13 Months



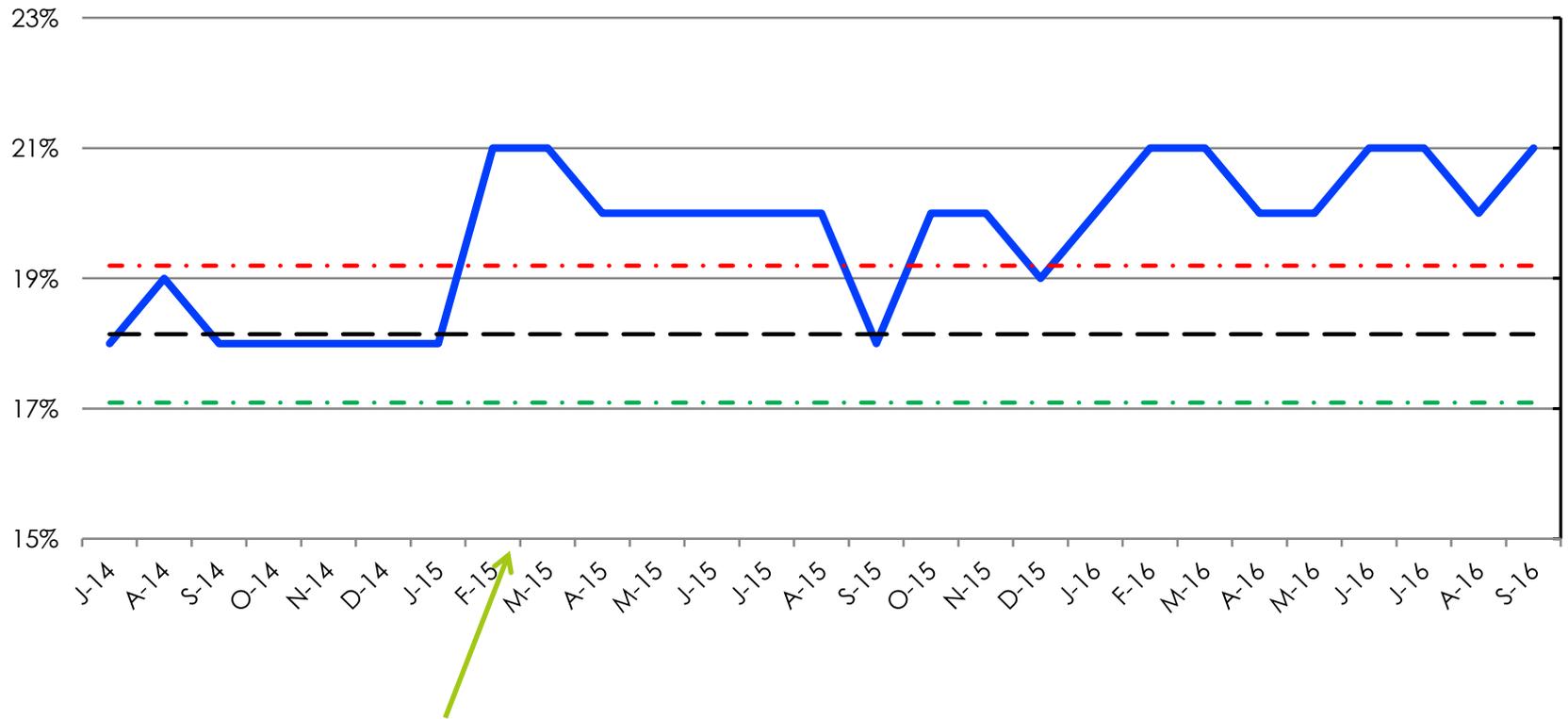
Outcomes— Quality

% with Diabetes with Retinal Exam in the Last 13 months



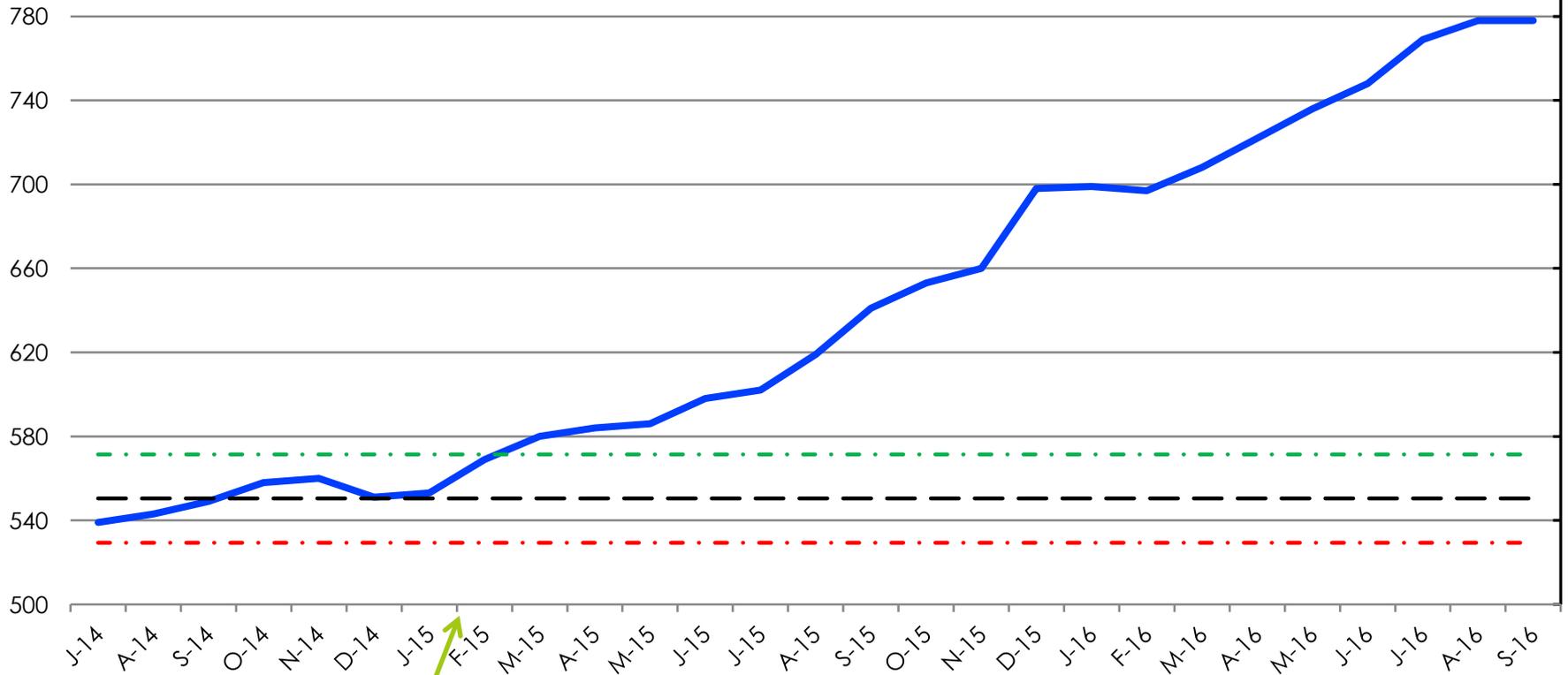
Outcomes— Quality

% with Diabetes with A1c > 9



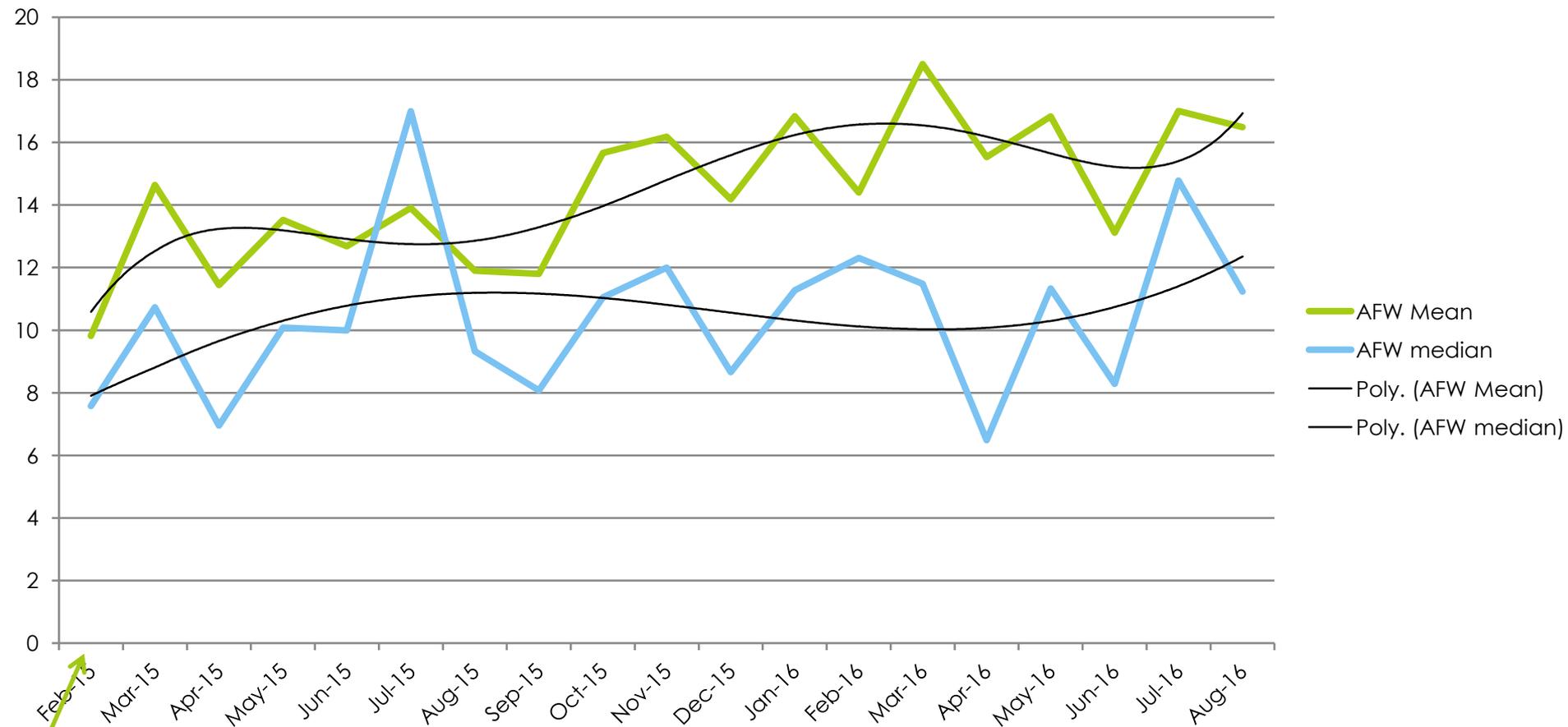
Outcomes— Quality

of Diabetic Patients Seen in the Last 13 months



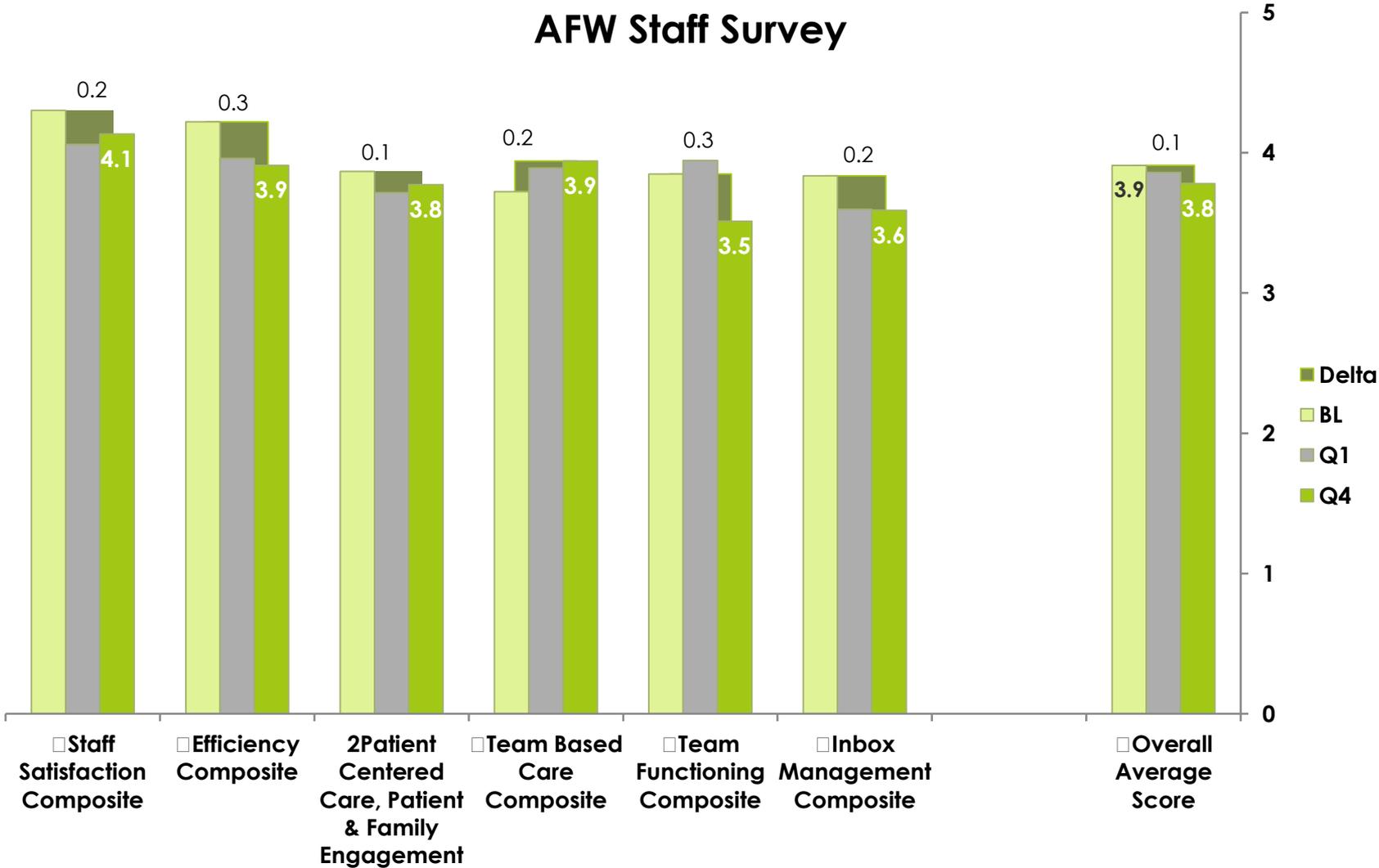
Outcomes— Quality

cFTE adjusted after hours documentation



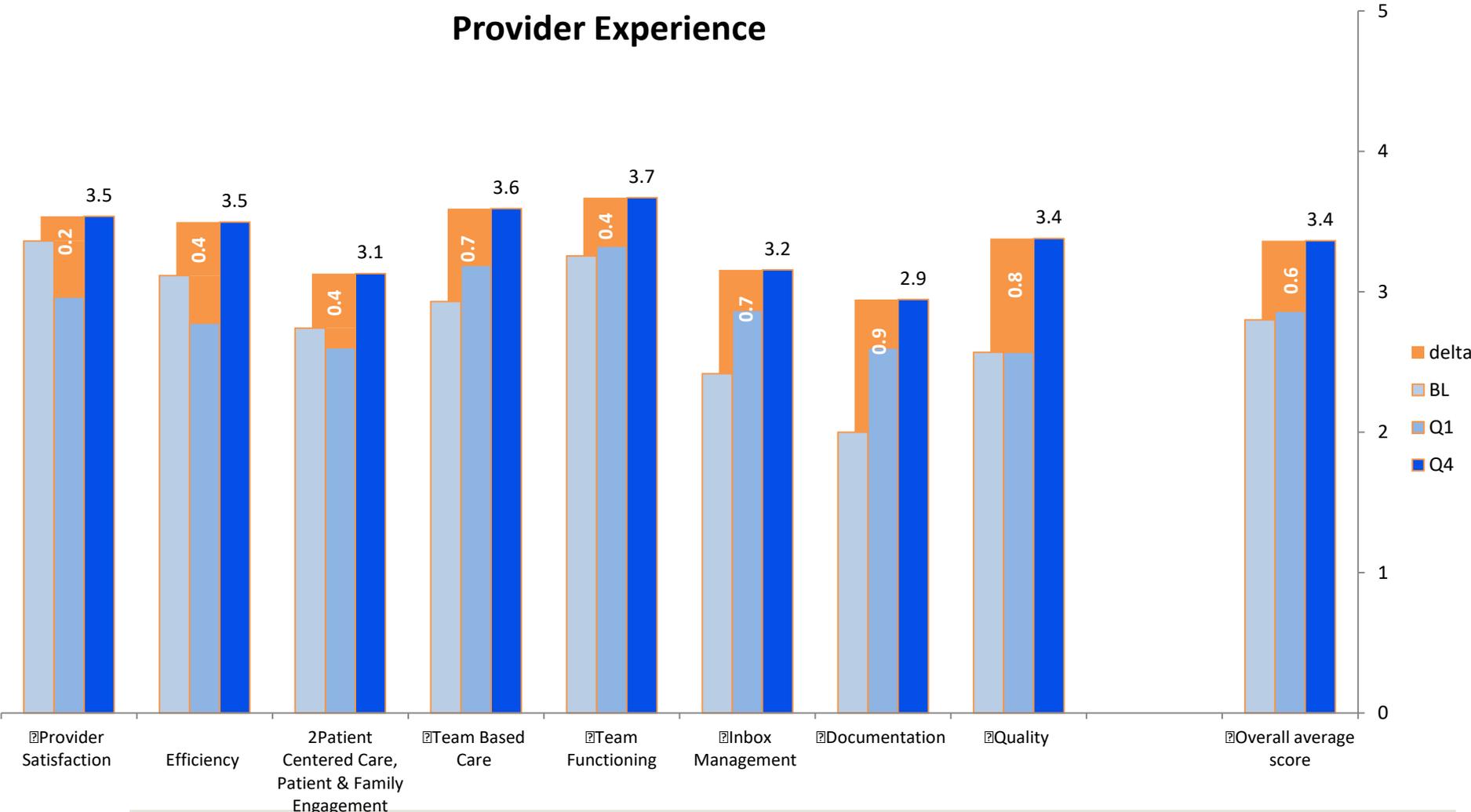
Outcomes— Satisfaction

AFW Staff Survey



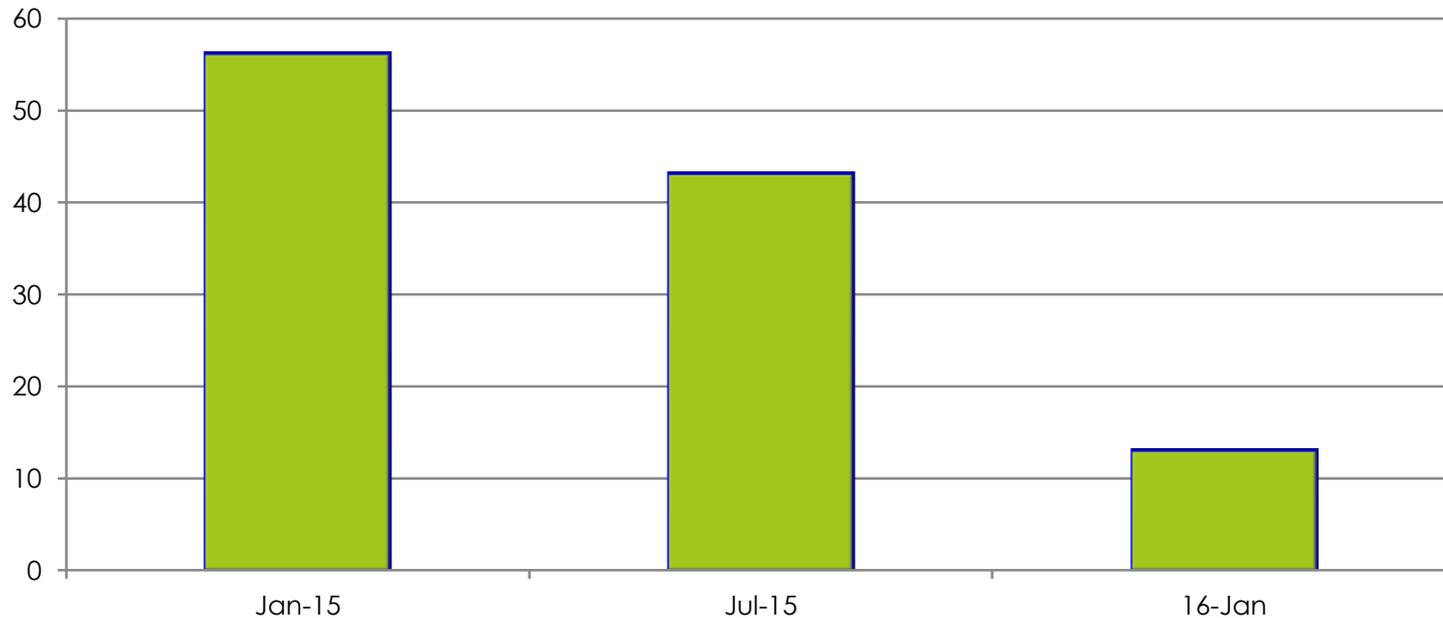
Outcomes— Satisfaction

Provider Experience



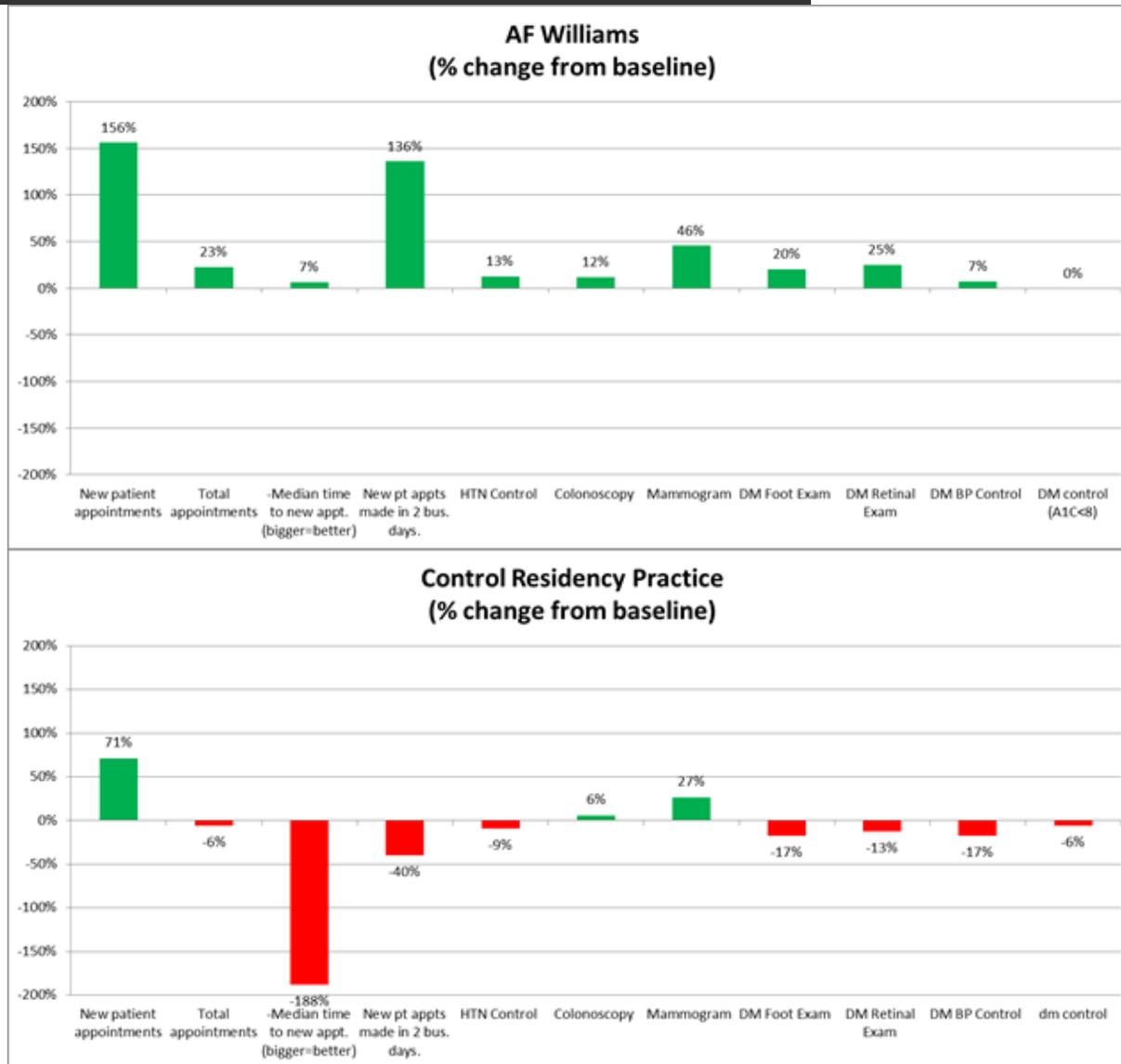
Outcomes— Satisfaction

**Provider Burnout Score
(Lower = Less Burnout)****

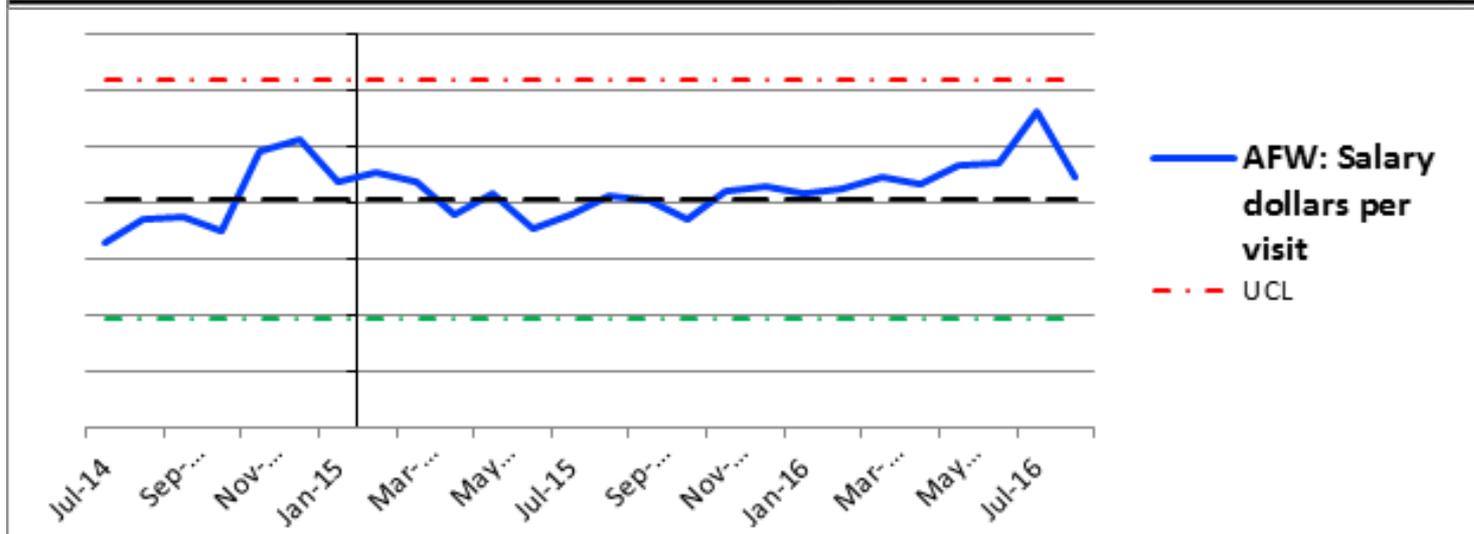
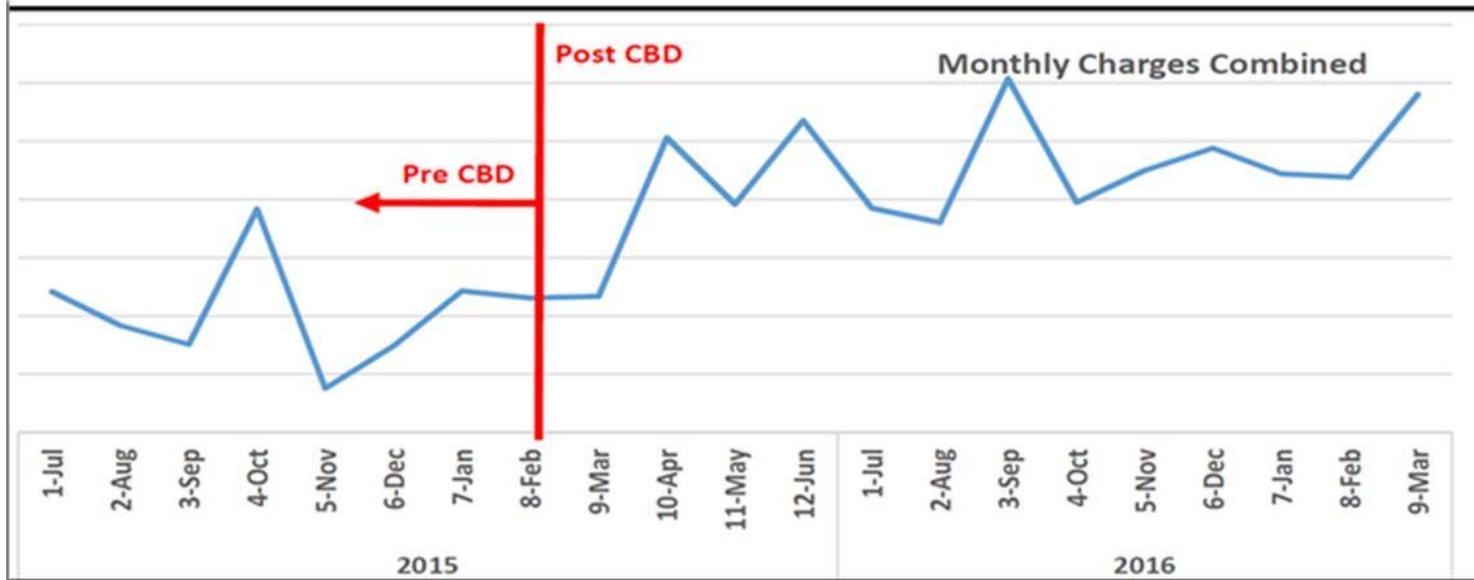


** 1 Question Maslach Burnout Inventory

Outcomes— Global Improvement Capacity



Outcomes— Finance



Challenges

Success



what people think
it looks like

Success



what it really
looks like

Challenges

- Growing MA staff
- Training MA's
- MA skillset
- Provider expectations on rooming
- Learning to e-huddle
- Learning the x-files
- Disruption of the 1 hour whole clinic meeting time d/t staggered lunches

Challenges

- Easy to underestimate
- Providers desire more support, but.....
- Changing an MA culture – “I can't...”

Lessons Learned

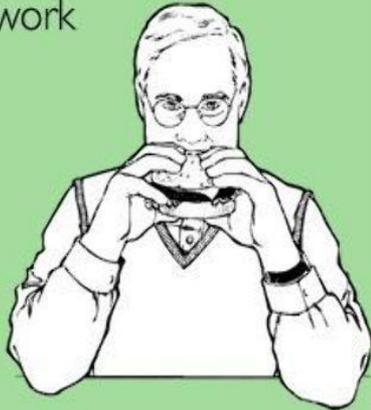


Lessons Learned



- Work together & practice consistently as a team & as units
- Learning new rules, positions and roles can be hard
- It's a game of yards and inches
- Sometimes you call an audible & change the play
- Great leadership, planners, players, special teams, coaches are all needed to win
- Evaluation is for improvement
- The playbook is thick, the season is long, and championships aren't won in a single season
- Have perseverance and grit. Celebrate your wins
- Keep your eyes on the prize for victory

I'd do anything to lose 10lbs, except
eat healthy and work
out.



your  cards
someecards.com

Enjoy More At Quotesfrenzy.com

The Pity Train has just
derailed at the corner of
Suck It Up & Move On,
and crashed into We
All Have Problems, before
coming to a stop at
Get The Hell Over It.



your  cards
someecards.com

Joy in Practice-- Patients

“I was blown away by the service...0 forms, and 0 time wasted”

“I don't feel like a passive spectator anymore, I'm an integral part of my healthcare team”

“I have never in my 66 years felt so well-cared about and for”

Joy in Practice— MAs

“APEX allows us to work at the highest level”

I can help get patients the care they need.”

“It’s challenging but exciting at the same time.”

“We’re part of the patients care more than ever”

“We’re having fun at work again and the work is done at the end of the day.”

“This new model gives me purpose”

Joy in Practice-- Providers

“I don’t have to do it all. Patient interactions are more connected and attentive”

“I barely touch the computer in the room anymore.”

“I’m done with all my notes by 5:30 or 6:00. That’s never happened before”

“It’s been a game-changer...it allows me to stay in practice and be happy.”

“APEX has changed my life.”

Please evaluate this presentation using the conference mobile app! Simply click on the "clipboard" icon on the presentation page.



Questions?